# THE EXPERIENCE OF LEARNING

edited by
Ference Marton
Dai Hounsell
Noel Entwistle

foreword by W.J.MºKeachie



SCOTTISH

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PRESS

### THE EXPERIENCE OF LEARNING edited by

Ference Marton Dai Hounsell

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What do students learn and how does that learning take place? Twelve researchers have combined to answer this question in The Experience of Learning, an overview of student study methods in higher education. This book charts the various approaches used by students to reading, essay writing and problem solving, and examines how these approaches are facilitated by teachers. Universities, polytechnics and other institutes of higher education, including the Open University with its emphasis on long-distance learning, come under scrutiny.

The research approach used is 'phenomenography', a kind of hard nosed phenomenology in which intensive interviews with students: are systematically collected, analysed and finally applied to the total educational orientation of students towards academic life. The results aid theory building because their intrinsic relationship to the actual experiences of students offer compelling insight for teachers.

While the main body of research took place in Britain and Sweden, the similarities in the forms of higher education teaching and learning across the world make it universally applicable. The range and depth of research represents a major contribution to the understanding of the educational process. The Experience of Learning is written in a readable and interesting style, accessible to both the expert and the layman.

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## FERENCE MARTON, DAI HOUNSELL NOEL ENTWISTLE

FOREWORD BY

WILBERT J. McKEACHIE

1984

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#### **Foreword**

#### by WILBERT J. McKEACHIE

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We Americans are terribly provincial on our views of psychology. As contrasted with the pre-World War II period when every psychologist read German and French and knew that familiarity with European journals was essential to being an effective scholar in Psychology, we have now come to read only our own journals, (if any), and to purchase only American books. Our provincialism has had the potentially good consequence of establishing a single language in psychology, English, but it should not excuse Americans from our lack of knowledge of other languages and does not excuse lack of familiarity with scholarly contributions in English not written by Americans. Thus, I want to represent strongly to my fellow countrymen that they will be missing an important contribution to the understanding of teaching and learning if they miss this book written by British and Swedish psychologists.

It would not be fair to the authors if this foreword were to attempt to summarize all of the rich conceptualization found in this volume. Nonetheless, it is important for Americans to realize what this book contains. The authors deal with problems of learning in real educational settings. They bring to bear on these problems both a sophisticated methodology and theoretical positions fully informed by modern cognitive psychology. Their approach offers ways of looking at the phenomena of learning that complement American studies.

Unlike many edited books, this book has a focus—research on student learning in higher education. Also, unlike most writing in this area, it involves learning in two different cultures. The common focus of the research methodology and conceptual framework provides insights which ring true not only for Great Britain and Sweden but for North America and other countries as well. In fact, both those concerned about applications of cognitive psychology to education and those concerned about basic understanding of cognition will find useful and interesting ideas in these chapters.

The research approach used is what Marton calls "phenomenography". Essentially this is a sort of hard nosed phenomenology in which intensive interviews of learners are systematically collected and analyzed. These may then be followed by experiments testing the understanding gained from interviews. The results are not only useful for theory building because their intrinsic relationship to actual experiences of students also offer compelling insights for teachers. Moreover, the book is written in a

readable and interesting style that holds the attention both of the expert and of the university teacher who is not an expert in cognitive science. In fact, since the book is about learning from the student's point of view, I would expect that many university students would benefit from the book, and I intend to assign it in my own cognitive psychology course for freshmen.

Modern cognitive psychology has stimulated university teachers to give greater attention to the importance of understanding and meaning as contrasted with recognition and reproduction as a goal of learning and higher education. This book gives us not only a great deal of research evidence with respect to the ways in which students achieve understanding but also has clear implications for methods of teaching and testing which help students find meaning — meaning which can be retrieved and used as a basis for further learning and problem solving. Faculty members uniformly think of their courses as contributing to the development of thinking that is more analytic or critical. Yet in practice we often teach in ways that direct our students to rote memorization, and then blame the students for the fact that they have not achieved our objectives.

I have often said in lectures that professors frequently confuse difficulty of a test with high standards of educational value, and that it is easy to make a test difficult without making it a more effective measure of achievement. This book has helped me to see what I was fuzzily describing. It attacks the 'building blocks' conception of knowledge — that knowledge involves knowing more and more details of a particular discipline, such as more historical dates or more historical figures. Test questions are made more difficult as they become more and more peripheral to the phenomenon or as they become narrower in scope, encompassing "very specific details of an event or minor part of a phenomenon." Such a conception of knowledge is frequently portrayed in our short answer and objective test items. Higher education, on the other hand, is generally concerned with introducing conceptions of knowledge involving greater understanding and analytic ability.

At the heart of this book is the notion that students' approaches to learning are affected by their intentions — "students who did not get 'the point' failed to do so simply because they were not looking for it." In short, some students focused on the test in itself—the pages, the words, the reproduction of the textbook, while other students focused upon the author's intentions, the main points, and the conclusions to be drawn. This finding illustrates the value of the methods used by these authors. Our typical input-output models would simply determine that some students had learned the material, and other students had not, but we would not know how these differences in achievement were related to differences in the students' purposes and strategies of learning. "It is the intention to learn from the text which makes people misunderstand it."

Qualitative methods are applied not only to learning from textbooks but also to the experiences of lectures, to essay writing in history and psychology courses, and to analysis of the process used by students in applied to the total educational orientation of students toward university life. As contrasted with my own and other books on teaching and learning, this book is not prescriptive; nonetheless, it is helpful. What the authors

do is to illustrate ways in which learning occurs and how learning has been facilitated by teachers. Readers are then left to work out for themselves how the insights may be applied to their own situations.

In short, the range and depth of the book represent a major contribution to our understanding of university teaching and learning.

#### Preface

The scope of this book is both broad and narrow. It is about learning, and contains ideas of fundamental importance to all those who are interested in how people learn. The book has a narrow focus insofar as it presents the results of research from a series of related studies into the way students learn in higher education. Its claim to generality, however, stems from the radical nature of both the research methodology and the emerging conceptual frameworks. It provides a way of understanding student learning which has very direct implications for teachers and students in schools as well as colleges and universities, and also for psychologists interested in the phenomenon of human learning in its own right.

The similarities in the types of learning demanded of students attending universities and colleges in different countries make the findings of this research relevant across most educational systems. Or at least the effects of any major differences in the systems can be readily inferred from the variety of educational situations described by the twelve authors. Their experiences cover both Swedish and British Universities and polytechnics, and both conventional institutions and the Open University with its emphasis on distance learning. The main teaching methods—lectures, tutorials, practical work and comments on returned assignments—will be found throughout tertiary education—and in a modified form across the senior classes of secondary education or high schools. The theme of this book is thus of relevance and potential interest to educators in different countries and of different age groups—although it applies most directly to teaching and learning in higher education.

The evidence presented in the book derives mainly from interviews. Thus there is little in the way of complex statistics which would be off-putting to readers who are not familiar with social science research. Rather the findings are built up through the systematic presentation of representative extracts from interview transcripts, so the learners are speaking directly to the reader about their experiences. Of course there are conceptual frameworks derived from the data, and these bring in technical terminology. But the new terms are carefully explained, and are often self-explanatory. The book is therefore a research report—it justifies its conclusions carefully on the basis of data which has been systematically collected and analysed—but it is also intended to be readable.

Although the structure of the book follows the design for a research monograph or symposium—a general introduction followed by chapters by research workers talking about their own research findings, with a series of more integrative chapters to pull these findings together—the

level of writing and the amount of detail presented is intended to make the ideas accessible to a wider audience. There has also been a considerable effort put into creating overall coherence in the monograph. Coherence was easier than usual to obtain because similar theoretical perspectives and research approaches had been adopted by all the contributors. But in addition it was possible to bring the contributors together on two occasions, thanks to financial support from both the Swedish and the British Social Science Research Councils, to discuss first the structure of the book and then to have lengthy and detailed discussions of the draft chapters. The result is a research monograph with a difference: we hope that difference shows.

#### CHAPTER ONE

## Contrasting Perspectives on Learning

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#### Introduction

This book is about the experience of learning as seen from the student's point of view. But in this chapter that experience is examined first from perspectives adopted by other groups—lecturers, psychologists, and educational researchers in an attempt to explore the meaning of learning as it is understood by these different interested groups. The student's perspective will be used in subsequent chapters as a way of developing a new conceptualization of learning, but always it will be important to recognise the continuing existence of alternative frameworks for understanding learning in higher education. Each group and, ultimately, each individual, has an interpretation of reality which is in some sense unique. And yet effective communication depends on shared assumptions, definitions, and understanding. Out of this paradox both teachers and researchers struggle to make sense of the contrasting experiences of learning reported by those involved in the process of education. While earlier research tended to use ready-made concepts from psychology and sociology to explain differences in student attainment, the new research reported here develops a set of concepts altogether more accessible to teachers and students and firmly rooted in their common experiences. These concepts provide a radically different perspective on learning which should bring about a better, shared, understanding of learning processes which are currently interpreted very differently by these two groups.

The research focus of this book is higher education. Almost all the detailed evidence in subsequent chapters is drawn from that particular setting, and yet implications, in a general way at least, can be seen more broadly. In every educational system one of the prime considerations of administrators, teachers, and students alike, at each age level, is what we call the outcome of learning—what students can demonstrate of their increases in knowledge and changes in understanding as a result of their experiences in school or college. This book explores what students learn and how that learning takes place.

Educational research can be seen as careful, systematic attempts at achieving a better understanding of the educational process, with the aim of improving its effectiveness. Our task is thus to describe more clearly how learning takes place in higher education, and to point out how teaching and assessment affect the quality of that learning. From these descriptions teachers should be able to draw their own lessons about how

to facilitate their students' learning. All the evidence presented in the main body of the book comes from studies carried out either in Sweden or Britain, and yet the similarities in the forms of teaching and learning in higher education across the world suggest that our main message should strike home to lecturers and students in every country. The message, in its simplest form, is that as educators we should be much more concerned than we are with the quality of learning. Much of our current teaching and assessment seems to induce a passive, reproductive form of learning which is contrary to the aims of the teachers themselves. That message, and its elaborations, can be followed throughout the book. It is introduced here as an assertion, but later an impressive array of research evidence, and both logical and empirical analyses will be used to justify it.

#### **Lecturers' Perceptions of Student Learning**

If we are interested in the outcome of learning, a sensible starting point is the aims of higher education. We should then examine what is actually achieved in relation to what is intended. What are students expected to learn? Clearly the answer will differ in detail from subject area to subject area, but is there any general consensus? A study at Lancaster University sought to examine educational objectives in higher education by interviewing lecturers. Rather than asking general questions about 'aims' which attract vague answers, the interviewer, Keith Percy, concentrated on the everyday concerns of lecturers and asked about specific course objectives — what differences they found between 'good' and 'poor' students; how they graded examination answers; and how they decided whether their own courses had been successful or not. Out of their comments came an indication of the lecturers' intentions and expectations and their assessment of how well the students were living up to those expectations.

Most lecturers saw university as having general effects on the quality of students' learning and thinking, and their own specialism as making a distinctive contribution to this educational process. University forces students to make

"a great attempt to get to grips with conceptual problems ...", it seeks "to make them think about explanations, ... [making] them a bit more self-conscious about their categories ... At 'A' level (18 + examination) they learn too much detail — they've no time for thinking."\*

An economist argued that the study of economics involves a characteristic way of thinking;

"More recently I've come round to the view that economists have acquired a way of looking at the world which is indelible, and even though they may not find themselves in a position where

they can use their analytical techniques very consciously, in fact their whole way of treating questions is affected by this kind of training."

Similarly a philosopher outlined a 'philosophical approach'

"which should bring out and develop the ability to approach questions analytically, . . . distinguishing very clearly such different questions as the empirical, the evaluative, the historical, and the psychological . . ."

A scientific mode of thinking was described by a psychologist as being

"concerned with the nature of evidence on which you base argument, a sort of perpetual quest to set forward an argument, and then see what information will support the argument..."

Of course, many lecturers stressed the importance of acquiring skills and detailed knowledge. For example, a lecturer in physics had a clear idea of what he and his colleagues were trying to achieve, with their students.

"We want to develop certain skills in the laboratory . . . the ability to design the apparatus necessary to carry out the particular experiments, to get the answers that you wanted to get at and not any other answers, to interpret the numbers that come out of the experiment and analyse them. Secondly, we want to develop mathematical and deductive skills, to allow them to analyse their experiments . . . or any other problem. Thirdly, we want — perhaps too much — to cover the entire ground of classical and modern physics so that they have a fairly comprehensive idea of what the entire corpus of knowledge is in the subject — with a fair amount of emphasis on the latest developments so that they can get out into a job knowing what physics is like today."

Other lecturers were more critical of the value of knowledge. They saw background knowledge as an essential prerequisite for thinking critically and imaginatively about their subject, but were often apprehensive about over-emphasizing factual knowledge and binding the student too firmly within currently accepted theoretical frameworks.

"Most of one's time one is enslaving [the student] to certain techniques and disciplines in order that he shall be accepted as an exponent of that sort of discipline... One must also liberate him from them, enabling him to stand back from them and see that they are a rather arbitrary historical collection of techniques which are not the end of the story...

Very few students will actually do this . . . (but) one would be doing an injustice to them in not making it clear to them that their path of duty lay not in accepting, but in changing, the subject."

The unifying theme of lecturers' views about the main purposes of

<sup>\*</sup> These extracts are from Entwistle et al., 1971, Volume 2.

university education can be summarized by the term critical thinking—or more than that, what Ashby (1973) has described as post-conventional thinking.

"The student moves from the uncritical acceptance of orthodoxy to creative dissent . . . (In higher education) there must be opportunities for the intellect to be stretched to its capacity, the critical faculty sharpened to the point at which it can change ideas" (pp. 147–9).

In the interviews with lecturers there was substantial consensus about the importance of critical thinking, but it was far from clear how this was expected to be achieved through the predominant teaching methods of lectures, tutorials, and practical classes. It was also far from clear that methods of assessment contained the same emphasis on 'critical thinking' that ran through the lecturer's comments on their expectations. In fact the predominant impession from the descriptions of methods of teaching and assessment was that there was a profound contradiction between lecturers' intentions and what the students achieved. It seemed that lecturers looked for critical thinking, yet taught and assessed conformity in ideas and the acquisition of detailed factual knowledge (Entwistle & Percy, 1974).

There may be only a tenuous connection between the 'teaching objectives' (what lecturers say they want to do) and their 'teaching activity' (what they actually do)—a lack of relationship between "intention and performance" (Entwistle, Percy & Nisbet, 1971, Vol. 2, Cht. 13, p. 12).

This unrecognized contrast between intent and the effects of teaching is often expressed as a distinction between the formal and the 'hidden' curriculum. Snyder (1971) at MIT pointed out that the formal curriculum, as defined by the staff, demanded originality, problem-solving, independence of thought, and analytic skills. In contrast, the hidden curriculum—the message received implicitly but strongly by students—depended on the teaching methods and assessment procedures, and these encouraged question-spotting and rote memorization of facts and theories considered important by the teachers.

The Lancaster lecturers were, on the whole, not aware of the wide divergence between intent and teaching procedures. Although they were aware that many students showed a disappointingly low level of understanding after three years at university, they also had ready explanations for such disappointing outcomes — explanations which were based on the inadequacies of students.

"There are two kinds of (weak students) really: the downright indolent (or those who put efforts into other than academic work) and . . . some who don't understand."

"(Again there is the student who) is not very well motivated; he takes the courses largely because he likes other courses even less. He may be doing his degree on that basis ... only attending

university because there's nothing else more intelligent occurred to him to do."

Out of a depressingly uniform set of comments berating students for their inadequacies of intellect or motivation, only one lecturer pointed out a difficulty in accepting such simple explanations of poor performance:

"The main trouble is unwillingness to get down to work, but having said this, there is no doubt a paradox . . . in that at some time in the past, in order for a person to have got here, presumably he had been willing, and something is going on which diminishes this willingness."

The resolution of this paradox will become clear as soon as we look at this situation from the student's viewpoint. But for the moment let us look instead at two other sets of contrasting perspectives. Both the psychologist and the educational psychologist have a professional interest in learning, but they have looked at the phenomenon in quite different ways, and made use of a variety of research methodologies. The different questions raised and methods followed produce characterizations of learning which have rather little in common.

#### **Psychological Research on Learning**

#### Research into memory and learning

Teachers look to psychologists for explanations of fundamental principles of learning. It used to be accepted that an understanding of underlying brain mechanisms and functions would have direct implications for the teacher. Now the 'direct' links seem less clear, as we shall see. But much of the early work in experimental psychology involved attempts to uncover general principles of learning, and followed as closely as possible the well-tried research procedures in the physical sciences.

To investigate memory, for example, psychologists such as Ebbinghaus tried to avoid the 'distorting' effects of previous knowledge. Scientifically it was much sounder to see how well people remembered new material. And what better way could there be to ensure that it would be new to every experimental subject than to present nonsense syllables? Thus a whole tradition of memory research was built out of nonsense, but was only much later recognized as such. The teacher, at least, is intent on helping pupils to build meaning.

Early in the development of psychological ideas about learning William James had argued intuitively for the importance of associations in determining what is remembered. The early experimentalists were able to confirm these introspective impressions of the effects on memory of contiguity, (remembering ideas or facts closely associated with each other) and of exercise (repetition). It was also noted that we tend to repeat behaviour which leads to satisfying consequences (law of effect). It

was, of course, an age-old principle that behaviour could be controlled by reward and punishment, but Skinner was able to demonstrate how complex sequences of behaviour could be built up in pigeons by systematic linking of behaviours with positive reinforcement (food pellets). Out of the behavioural 'shaping' of pigeons and rats, grew a research industry, and a whole educational technology (programmed learning), which put impressive weight behind the importance of immediate reinforcement (through knowledge of results) and of the presentation of increments of knowledge arranged in small sequential steps. Knowledge could thus be efficiently assembled, like a brick wall, out of its component blocks. Yet the move from the experimental results on the behaviour of animals to general principles of learning in the classroom stretches credibility more than a little. Skinner may have felt iustified in this extrapolation through seeing important similarities between learning in animals and humans. But subsequent generations of students and teachers have found this view a wholly inadequate description of teaching and learning. Many have resented the image of the teacher as a 'manipulator of learning', criticized the view of learning as solely the acquisition of information, and found the principles of programmed learning to be of limited value in the classroom.

#### Intelligence and individual differences

Another important thread in the psychological study of learning has grown out of the early attempts of Spearman and Pearson to investigate individual differences in the speed and efficiency of learning. In common parlance, people who learn fast and well are considered to be 'intelligent'. Intelligence is an hypothetical construct — a way of explaining differences between intellectual performances. Spearman was able to show that there was, in school children, a general factor 'g' which described a tendency for pupils to show similar levels of performance in different school subjects. In France, Binet had been able to distinguish between normal children and those who were considered to be ineducable, by means of a set of graded intellectual tasks involving memory, knowledge, and reasoning. Allying Pearson's statistical findings to Binet's development of graded sequences of intellectual tasks produced what came to be known as intelligence tests, and from them the IQ or intelligence quotient which provided a ready sorting device to determine the educational futures of generations of children. Again both a technology and an industry were born and, above all, out of the short-term consistency in IQ scores came beliefs both about its resistance to change and its general validity as an indicator of educational potential.

The idea that a single set of tasks could provide a good indicator of 'general intelligence' has been difficult to shift. Its simplicity is appealing. But even the early work of Thurstone on students showed that up to seven 'primary abilities' could be identified—perceptual speed, memory, verbal meaning, spatial ability, numerical ability, inductive reasoning, and verbal fluency. Since then even more elaborate sets of separable

abilities have been devised, culminating in Guildfor's 30 distinct abilities with four types of content, involving 120 separate tests. Intelligence, it seems, can be viewed as a global or summary variable, containing elements of many subsidiary skills. It is also modifiable, at least within limits: it is largely stable, but importantly variable. Education and home environment can, and do, affect the levels of measured intelligence. And people exhibit more intelligent behaviour in some aspects of their life than in others.

Besides intelligence, other traits have been used to describe relatively stable characteristics of individuals which may affect the speed or efficiency with which they learn. The term motivation has been used to describe the motive power which creates the 'movement' of learning. Unfortunately this crude mechanical analogy implies that the natural state of the human body and brain is at rest or in uniform and unidirectional motion. This contradicts experience: differentiated activity is the waking norm of human behaviour. Nevertheless it is still useful to ask about the motive or goal of a person's behaviour, and to question the causes of the particular level and direction of a person's current activities. In the more recent psychological literature, several distinct forms of motivation have been described (Entwistle, 1981). Competence motivation describes the positive orientation towards learning created by the repeated experience of successful learning activities. Extrinsic motivation describes the seeking after external reinforcement for learning, from school marks, grades, or qualifications. Intrinsic motivation takes two forms, one in which learning is explained by interest and perceived relevance, and another generally described as achievement motivation, relies on a striving for success which feeds on perceived success and boosted self-confidence.

These forms of motivation are describing learning in terms of traits which are the habitual forms of satisfaction derived by different people from their experiences of learning (see Kozeki, 1984). But they also have negative poles. It is salutary to consider what form of (de)motivation is built up by the repeated experience of failure and humiliation, and to ponder the educational consequence of 'incompetence demotivation' or of having no achievable or satisfying goal in learning. Of course, the occasional experiences of low marks or failure may increase determination, and some anxious people seem to go through their education, driven more by a fear of failure than by a hope for success.

#### Cognitive structure and processes

More recent work on human memory has tried to describe how information is processed, coded, and stored. This information processing model, in its simplest form, envisages a short-term, working memory (STM) which sorts out incoming perceptions and relates them to previous knowledge, and a long-term memory (LTM) in which experiences and conceptual knowledge are stored. Psychologists such as Lindsay and Norman (1972) have described how conceptual hierarchies are developed. Their models present the memory as involving logically ordered sets of

concepts, stored in terms of increasing generality. But this emphasis on the logical properties of concepts applied mainly to everyday objects whose defining features are readily deduced. Abstract concepts, or those which have no agreed formal definitions, cannot be stored in this way.

David Ausubel has also been interested in concept development, but he has chosen to emphasize the essential uniqueness of each person's cognitive structure (Ausubel et al., 1978). Abstract concepts are built up from a set of experiences which are only partially shared with others. Learning thus becomes a matter of constructing meaning. New information has to be interpreted in terms of prior knowledge and concepts which contain shared, and unique, shades of meaning. What a student learns can therefore be exactly what is taught only in relation to facts or formally defined concepts. Otherwise the student will necessarily acquire, and subsequently seek to communicate, an interpretation of knowledge which contains a personal aura of meaning in addition to the ideas the teacher was intending to present.

Ausubel considers the distinction between rote learning (memorization) and meaningful learning to be important in education. He also points out that students develop learning 'sets' which predispose them to utilize either rote or meaningful learning in tackling academic tasks.

"Irrespective of how much potential meaning may inhere in a particular proposition, if the learner's intention is to memorize it arbitrarily and verbatim (as a series of arbitrarily related words), both the learning process and the learning outcome must be rote or meaningless. And, conversely, no matter how meaningful the learner's set may be, neither the process nor the outcome of the learning can possibly be meaningful if the learning task is not potentially meaningful . . relatable to his cognitive structure . . ." (Ausubel et al., 1978, p. 41).

Even where meaningful learning is required by teachers or lecturers, pupils (and students) may often use rote learning instead.

"One reason why pupils commonly develop a rote learning set in relation to potentially meaningful subject matter is because they learn from sad experience that substantively correct answers lacking in verbatim correspondence to what they have been taught receive no credit whatsoever from certain teachers. Another reason is that because of a generally high level of anxiety or because of chronic failure experience in a given subject . . . they lack confidence in their ability to learn meaningfully, and hence perceive no alternative to panic apart from rote learning." (Ausubel et al., 1978, pp. 41, 43.)

#### Learning as personal development

In contrast to the explanations of learning described in previous sections which rely either on controlled and contrived learning settings, or on learning material deprived of links with previous knowledge, Carl Rogers

has described human learning out of his own experiences of working with people as a psychotherapist and university teacher. He has come to believe that significant learning is possible only when the individual has self-confidence in his ability to learn and feels that the experience of learning will be personally rewarding and meaningful. Freedom of self-expression and the teacher's unqualified regard for the student are the linchpins of Rogers' views on education. In his influential book Freedom to Learn, he is strongly critical of traditional approaches to teaching which foster competition and provide experiences of failure for many children. He condemns didactic or expository methods, unless they form part of an entirely different approach to education. Rogers wants knowledge to be made subsidiary to the process of learning how to learn, as to-day's new ideas are to-morrow's outdated information. And above all he wants to set the learner free from the type of experiences which crush both curiosity and self-confidence. He wants students and teachers to recognize that emotions are an essential part of learning—that is of 'algnificant, existential' learning, learning which develops personality as well as the intellect.

"Not the lifeless, sterile, futile, quickly forgotten stuff which is crammed into the minds of the poor helpless individual tied into his seat by ironclad bonds of conformity. I am talking about LEARNING—the insatiable curiosity which drives the adolescent boy to absorb everything he can see or read about gasoline engines in order to improve the efficiency and speed of his 'hot-rod' . . . .

We frequently fail to recognize that much of the material presented to students in the classroom has, for the student, the same perplexing, meaningless quality that the list of nonsense syllables has for us. This is especially true for the under-privileged child whose back-ground provides no context for the material with which he is confronted. But nearly every student finds that large portions of his curriculum are for him, meaningless. Thus education becomes the futile attempt to learn material which has no personal meaning." (Rogers, 1969, pp. 3-4).

In contrast Rogers wants to establish a 'community of learners', free to pursue those ideas which excite them, ideas which have intense personal meaning. He wants, above all:

"To free curiosity; to permit individuals to go charging off in new directions dictated by their own interests; to unleash a sense of inquiry; to open everything to questioning and exploration; to recognize that everything is in process of change . . . [And] we know . . . that the initiation of such learning rests not upon the teaching skills of the leader . . . not upon his lectures and presentations, not upon an abundance of books, though each of these might at one time or another be utilized as an important resource. No, the facilitation of significant learning rests upon certain attitudinal qualities which exist in the personal relationship between the facilitator and the learner." (Rogers, 1969, pp. 105-6).

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For Rogers these qualities are 'realness' (the teacher shows boredom, interest, anger, sympathy—is himself), 'prizing, acceptance, trust' (of the student's personal and intellectual qualities) and 'empathetic understanding' (the ability to feel how learning seems to the student).

This view of learning has a richness, and immediacy of impact, which is lacking from the mainstream psychological research in learning. It also seems to be more closely related to the aims of higher education as indicated by the lecturers' comments on what types of learning they expected of students. But the distinction between learning as the acquisition of discrete packages of information, and as a change in the student's conceptions of himself and the world around him, recurs in the research literature and throughout this book. Both views of learning are strongly felt and vigorously defended.

#### **Educational Research on Student Learning**

With the exception of the work reported in the last section, psychological research on learning has been carried out in a laboratory setting or has made use of artificial or over-simple learning materials. Even Rogers' ideas derive mainly from a clinical setting. Attempts at applying the theories derived from this research directly to classroom situations have not been particularly successful. It is now recognized that psychological theories must have 'ecological validity'—that is, the theories must be derived from the settings to which they are to be applied. Otherwise there can be little confidence placed in the utility of the theory.

Educational research workers have also approached student learning using contrasting perspectives and methodologies. Here the clearest distinction is between studies which have sought to predict subsequent academic performance, and those which have attempted to describe students' experiences of higher education. In moving from one focus to the other there is also an important shift in research paradigm which is of particular significance in understanding the studies reported in subsequent chapters. This paradigm shift is thus presented as a separate section.

#### Selection and prediction studies

Educational research has provided a great deal of evidence about the factors associated with student learning. In the 1960's and early 1970's the main research interest was in selection and prediction. Was it possible to improve the accuracy of selection for higher education by using head-teachers' ratings or tests of academic aptitude? To what extent could degree class be predicted from measurements made during the first year of studying?

In the United States the Scholastic Aptitude Test had proved effective as a way of selecting students for universities and colleges. Correlations between test scores and college marks had been reported to be around

0.65\*/ (Scannell, 1960). Following the American experience, studies in Britain examined the value of tests of academic aptitude. In both Scotland (Powell, 1973) and England (Choppin et al., 1973) correlations were disappointingly low (generally less than 0.15), and scores on aptitude tests added little to the accuracy of selection based on entry qualifications alone.

Head-teachers' ratings of pupils showed higher correlations with degree class (0.26 overall, but as high as 0.59 in mechanical engineering—Choppin et al., 1973), but Nisbet and Welsh (1966) found that teachers' ratings failed to discriminate among the crucial group of students with minimum entry qualifications where they might have been most useful. What other factors might explain the very different levels of academic performance among students? Different forms of motivation were described in an earlier section, and have been used in many of these studies.

Entwistle (Entwistle & Brennan, 1968; Entwistle & Wilson, 1977) used cluster analysis to demonstrate the existence of groups of students with contrasting forms of motivation. Two main clusters were described as having 'fear of failure', and 'self-confident, hope for success'; other types of students were described as 'radical and extraverted', and 'idle and unmotivated'. The first three groups all achieved above average degree results, while the last group did very badly indeed.

Wankowski (Raaheim & Wankowski, 1981) has argued that students who come to university for clearly defined reasons and with distinct vocational goals, are more likely to be successful than students with diffuse, unarticulated goals. Wankowski is describing a form of extrinsic motivation, while attempts at measuring students' motivation have more commonly concentrated on the competitive form of intrinsic motivation labelled academic achievement motivation. Levels of correlation with degree results have rarely exceeded 0.3 and are more commonly between 0.2 and 0.1, but scales of motivation have often been supplemented in prediction studies by indices of study habits and attitudes.

Perhaps the best-known inventory of study habits and attitudes was devised by Brown and Holtzman (1966) who reported correlations of over 0.4 with grade-point average, although rather lower correlations have been obtained in Britain (Cowell and Entwistle, 1977). Work on study habits indicates, above all, that organized study methods and promptness in completing assigned work are associated with high grades, which comes as no surprise. These results do, however, imply that it is possible to generalize about effective study methods. An alternative position (Newman, 1957; Gibbs, 1981) is that students must develop their own idiosyncratic approaches. Yet in several studies systematic study methods (of whatever system) have been shown to be related to academic success. In an Australian study, Pond (1964) compared the comments made by

<sup>\*</sup>Correlation coefficients range from +1.0 indicating perfect correspondence, through zero indicating no relationship, to -1.0 reflecting a perfect inverse relationship.

contrasting groups of students. The 'high-achievers' reported that they organized their studying and time allocations, worked during free periods, decided on priorities and tried to improve their study techniques. The 'low-achievers' did not consider organized study to be important. Their comments suggested a transfer of blame for their poor performance. They tended to be critical of facilities, mentioning too much chatter, over-crowding, or scarcity of books. Presumably better-organized students modify their study strategies to overcome any defects in the academic environment and so maintain a more positive attitude to their studies.

This body of research on motivation and study methods has made relatively little impact on higher education. It has provided a rationale for providing advice for students on effective study skills, but the plethora of handbooks on the subject has had little, if any, effect. What is wrong? Why has this substantial body of research made such little impact on practice? Perhaps the most striking deficiency is that it failed in its main intention. Its purpose was to explain academic performance in terms of factors related to success and failure. Explanation was based on prediction, explored mainly through correlational analyses. It asked which characteristics of students were consistently related to high levels of academic performance. Some consistent correlations were reported - successful students were found to be intellectually more able, more highly motivated, and better organized. But such findings, while seeming obvious, paradoxically were supported by unconvincingly low levels of correlation. Not only are such findings too general to be useful and too obvious to provide new insights, but they also remain firmly rooted in an external view of the student—the perspective of educational psychologists. These researchers continued - as the lecturers had - implicitly or explicitly to blame the students for low levels of academic attainment. Thus failure is explained away as the result of low ability or lack of organization or application. They took little cognizance of the existence of individual differences in the processes of studying, nor of the complex educational and social context within which learning takes place.

More recent quantitative research has examined the processes of learning, but as this research has made use of concepts derived from the qualitative studies reported in Chapter 3 of this book, further discussion of this work will be introduced at a much later stage (Chapter 9). Instead we shall move on to consider qualitative studies which have examined students' experiences of learning.

#### An alternative research paradigm

Perhaps the crucial difference between the research which has grown out of the prediction studies and that on students' experiences, is not the quantitative/qualitative distinction in methodology, but a more fundamental philosophical division (Entwistle, 1974, 1976). The quantitative methods imply reductionism and the use of formal or mechanical models which embody assumptions about chains of causality. In contrast the

alternative paradigm involves approaches to research rooted in phenomenology which derive from a direct exploration of students' experiences of learning. The traditional research paradigm involves explaining student behaviour from the outside, as a detached, objective observer. The alternative approach seeks an emphathetic understanding of what is involved in student learning derived from students' descriptions of what learning means to them. It involves a shift not just of methodology, but of perspective.

Returning to one of the comments made by lecturers about students' lack of achievement, this switch of perspective can be illustrated quite dramatically. Remember, the lecturer had seemed puzzled by the apparent lack of motivation.

"The main trouble is unwillingness to get down to work, but having said this, there is no doubt a paradox . . . in that at some time in the past, in order for a person to have got here, presumably he had been willing, and something is going on which diminishes this willingness."

When students were interviewed (Entwistle, 1975), they saw no paradox. A reversal of perspective provides an immediate, if uncomfortable, insight for the lecturer.

"So often are students bored by uninspired teaching or disenchanted by badly taught material. While university lecturers are undoubtedly knowledgeable, they are totally untrained and unexamined in the art of communication . . . The completely incorrect assumption is that anyone with a good degree will automatically be able to impart this knowledge to others."

Traditional research approaches have also tended to explain student's lack of achievement from the lecturer's perspective. Thus an inventory of study methods (Entwistle, 1975) contained scales labelled "disorganized and dilatory" and "cynical and disenchanted". This description goes beyond labelling; it becomes libelling and an attribution of responsibility, at least by implication. It assigns blame for a poor academic performance solely to the student without asking how the student came to lose interest. Finally, it ignores the responsibilities of the institution and the teacher for the outcomes of learning. The new research paradigm switches perspective and so provides insights for the teacher which are not only firmly rooted in real-life situations in higher education, but are also more illuminating. They present a description of student learning from an unusual perspective — that of the student.

This new approach to educational research was introduced into the British literature in an influential paper by Parlett and Hamilton (1972), but was anticipated in part by the arguments of Bantock (1961). Educational research was criticized for following too slavishly a paradigm which had proved successful in the physical sciences—the hypotheticodeductive method. It was argued that the success of this paradigm with

Project of

inanimate matter or with plants and animals was not a good reason to believe it would be equally applicable to human behaviour—which is essentially purposeful. Parlett and Hamilton criticized what they termed the agricultural-botanical experimental paradigm in educational research, in which research designs incorporated a belief that students react to contrasting educational treatments as consistently as plants react to fertilizers.

They contrasted the traditional research paradigm with the procedures used by social anthropologists, who observe and question people in different cultures in an attempt empathetically to understand their customs and beliefs. They subsequently used the term 'illuminative evaluation' to apply to research designs which sought to evaluate educational innovations from within. The more general approach—investigating any educational situation from within—is the alternative paradigm which is used almost exclusively in the studies reported in the following chapters.

#### Research into students' experiences of higher education

The specific research methodologies adopted in our studies vary to some extent, depending on the different problems tackled. But they have important similarities, which will be introduced in the next section. They also have an affinity to two well-known studies carried out in the United States by Howard Becker and his colleagues (1968) and by William Perry (1970).

In Making the Grade, Becker entered as fully as possible into the students' experiences of learning although only in one rather idiosyncratic university. He and his colleagues became participant observers, attending classes and involving themselves in the students' social life. Their approach was very much that of the social anthropologist who takes detailed field-notes of the information provided and observations made. Their understanding of the student's perspective was built up out of their observations and discussions with students. Their analyses involved reading and re-reading their field-notes and also lengthy discussions among the research team to establish their main conclusions. They illustrated their findings through the use of comments made by students which had been selected as typical of a generally expressed view. Their main finding, as the title of the book suggests, was that students' academic life was dominated by assessment demands. Students' activities could be seen largely as coping ploys designed to achieve the grades necessary to make progress through the university system. Becker's findings fit closely into those of Snyder relating to the 'hidden curriculum'. Clearly whatever lecturers believe they are aiming at, the assessment pressures push students towards instrumental ways of studying. Strong resentment is felt by some students who expect the experience of university education to be stimulating and liberating, and who find in contrast syllabuses and assessment procedures to be restricting and stultifying.

One problem with Becker's study is that its focus was broad—on the totality of students' social and academic life, with little concern for the content of what was being studied. Comments on academic work tended to be too general to give any clear impression of the extent to which students might still be developing critical thinking and independent insights, in spite of the apparent strength of assessment constraints. William Perry, working as a student counsellor at Harvard had a different focus of concern. He was interested specifically in students' intellectual and ethical development. In particular, he was struck by a qualitative change in students' thinking during their years at college — a change from dualistic thinking to contextual relativistic reasoning. Students seemed to move from a belief that all questions have simple answers which are either right or wrong, to a gradual recognition that few problems, particularly in real life, have simple solutions. Even where facts are agreed personal interpretations lead to differing conclusions, making relativism the rule rather than the exception. And the strength to make a commitment to a personal interpretation derived from relevant evidence becomes the final stage of the development scheme (Perry, 1970, 1981).

Perry began his work using an inventory to explore changes in students' thinking, but soon had to face a dilemma. If he was expecting students to show a recognition of relativism, how could he justify a method of data collection which depended on a small number of pre-determined responses? His conclusion was that open-ended interviews provided a solution to his dilemma. Then his data could contain the wealth of individual variations implied by growing relativism - and they did. But the remaining problem was how to analyse a mass of disparate comments from students. Perry's technique was to treat the interview transcripts like a social anthropologist's field-notes. He read them through repeatedly until common themes emerged. Out of the themes came the major construct — developing relativism — and a series of twelve categories representing nine steps from dualism to relativism and on to commitment. and three ways in which students might resist this developmental trend. Coding instructions were produced to specify the type of comment which defined each category, and cross-validation was carried out to ensure that students could be allocated to categories consistently by different judges.

Although Perry's students did discuss their experiences on specific courses, the general tenor of the discussions and the interest of the researcher led to categories being identified which described general intellectual development. A study in Edinburgh came closer to the focus of the research reported in this monograph. Miller and Parlett (1974) applied the principles of illuminative evaluation to an investigation of students' reactions to the assessment procedures in a small number of departments, carefully chosen to cover the range of different practices then in use.

Miller and Parlett followed Becker's procedures in part, using participant observation, but also made use of semi-structured interviews and questionnaires. Analysis of the interviews followed the systematic procedure adopted by Perry. The transcripts were coded into content

areas which were analysed separately, but the full transcripts were also retained.

"It was therefore possible to refer to the comments made by all individuals on any one subject, as well as to the reports covering the whole of each interview" (p. 118)

The researchers' interpretations of the emerging themes were cross-checked against the impressions of a small panel of independent judges but even so Miller and Parlett were conscious of criticisms which might be made.

"Some will argue — even with this degree of methodological circumspection — that what we did falls short of the highest standards of rigour in social science, being dependent — as it certainly is — on personal interpretation of data, much of which cannot be made public. Our answer is two-fold. First, one must recognize that many of the supposed ills of 'subjectivity' are not confined to research of the type described here: even the most rigorous statistical survey study requires constant exercise of human judgement — e.g. in what questionnaire items to include; in what statistical comparisons will be made and how; and, most of all, in what light the findings are presented or summarized for others. This is not always acknowledged . . .

Finally, there is, of course, one powerful check on the study's validity — arguably the most powerful of all. Does the study present a 'recognizable reality' to those who read it?" (Parlett and Hamilton, 1972, p. 12).

Miller and Parlett focused their analysis mainly on students' experiences of the assessment procedures, and differentiated students' comments on the basis of 'cue-consciousness'—the extent to which students recognized or actively sought out 'cues' from staff to help them guide their attempts to play the assessment game. Cue-seekers

"button-holed staff about the exam questions; sought them out over coffee; made a point of discovering who their oral examiner was, what his interests were and, most of all, deliberately tried to make a good impression on staff" (p. 52).

Cue-conscious students were aware that there were cues and that thes were important, but made no attempt to approach staff directly. The fina category was 'cue-deaf'—a group of students who did not believe tha marks were affected by the impressions made on staff. They saw th assessment system as essentially objective and not open, in any way, to being influenced by extraneous factors.

#### Rigorous qualitative analysis

Miller and Parlett's approach to research comes close, in methodolog and 'spirit', to the research to be discussed in this book. Our data hav

been derived mainly from semi-structured interviews with students discussing their experiences of learning. Some of the learning has been in experimental settings, but using realistically complex learning materials. These are termed 'naturalistic' settings—they resemble normal studying in important respects, but retain elements of experimental control and manipulation. Other studies have been carried out, in 'natural settings', in which students have been asked questions about their everyday experiences in general or about particular pieces of academic work they are tackling at that time. This latter set of studies follows closely the procedure outlined by Miller and Parlett, and shows a similar concern with the context of learning.

There are, however, still some important differences from the Edinburgh research. First, several of the studies put prime emphasis on the content of what is learned—the 'what' of learning—before moving on to consider how that learning takes place. Second, the method of qualitative analysis is distinctive, and exceptionally rigorous. It sets out to identify concepts which describe important differences in the ways in which students learn and study. The specific differences give rise to distinct categories and each category is defined, or delimited, in terms of those extracts from the interviews which together constitute its meaning. In this way other researchers are able to follow similar procedures and then make detailed comparisons between the concepts and categories identified in the various studies. This procedure thus carries the 'hallmark' of scientific research, while not following the methods of the natural sciences.

The nature of this 'rigorous qualitative analysis' will be explained in more detail in later chapters, but it is necessary to explain how difficult it is to communicate in a fully convincing manner findings from this type of research. To provide a full description of the categories identified necessitates the presentation of the whole range of quotations covering the delimiting instances. Only in extensive research reports is this possible (e.g. Svensson, 1976; Wenestam, 1980; Entwistle and Ramsden, 1983). In the chapters that follow readers are generally referred to theses which contain the full range of extracts from the interviews. All that can be provided here are illustrations of typical comments. It should, however, be recognized that these extracts are only selections from the full body of evidence on which the descriptive categories rest.

It is important, in moving on to the chapters which follow, to keep in mind the implications of the change in perspective which shifts attention from the teacher's or the researcher's view to that of the student. This shift is crucial in ensuring that the explanations of student learning not enly have ecological validity within the real university, college, or school context, but also enable the researcher to make an interpretation of the andings which does justice to the totality of the students' own experiences. To reach this empathetic understanding, the alternative research paradigm has become essential. Its advantages should become clear from the 'recognizable reality' which is portrayed in each of the chapters which follow.

The book has a clear structure. The first group of chapters (2-4) summarize various studies in Gothenburg, out of which the research in Britain has developed. This research focuses closely on the *content* of what is learned, and how that learning takes place. It was based initially on data derived under *naturalistic experimental conditions*, from students who had been asked to read academic articles. But it has subsequently been extended to consider other ways in which students learn by changing their conceptions of reality.

Chapter 2 looks at what is learned, the outcome of learning. Chapters 3 and 4 consider how learning takes place, the intentions and processes of learning, the ways information and study skills are organized, and their

relationships to outcome.

Chapter 5, the last Gothenburg study, introduces the next group of chapters which introduce individual projects which have looked at the ways in which students tackle learning tasks in everyday settings. The first project is a case study in learning from reading which also exemplifies the relationships between the concepts introduced in the preceding chapters. The British projects begin with Chapters 6 to 8 which continue the analyses of different types of learning task, by considering listening to lectures, writing essays, and working out problems. Each set of interviews identified different descriptive categories in the experiences of learning, but with important similarities.

In Chapters 9 and 10 the natural setting is expanded and the final two projects report the broader contexts in which students work—first in terms of the institutional setting, and then by considering education in

terms of its overall impact on the individual student.

The last two chapters are summaries, but with different principles of integration. Chapter 11 seeks implications from the previous chapters for what we might do to improve the quality of learning in higher education. It is not prescriptive: that would contradict the message of the research it was summarizing. Learning depends on its specific content and context. Case studies are used to illustrate ways in which learning has been facilitated, but the reader is left ultimately to work out ways in which the ideas might apply in his or her own situation.

The final chapter brings together the concepts and methodology introduced in the previous chapters. It attempts to provide a loose framework within which to interpret similarities and differences between the range of categories presented earlier. As this research area is still developing rapidly, no definitive integrative framework could do justice to the separate investigations. However, the studies have used variants of the same rigorous qualitative methodology. And a discussion of the distinctiveness and value of this methodology in relation to the substantive findings on student learning concludes the book.

#### CHAPTER TWO

#### Outcomes of Learning

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#### The Quantitative Conception of Knowledge

One of the longest-running programmes on Swedish television is a series called Double or Quits, which was modelled on similar quiz programmes. in the United States and Britain. Below are some examples from one of the programmes:

Which nations were involved in the battle of Lizza in 1866? (A question put to a contestant whose chosen subject was "Maritime History").

In Chopin's manuscript of the *Preludes* and in the original German edition, he dedicates them to Joseph Kessler. The first French and English editions however are dedicated to another contemporary of Chopin's. Whom? (A question on the subject of "Chopin and his Music").

Questions of this kind are typical of those put to laymen or experts on many radio or television programmes. Since those who take part in the Double or Quits programmes are experts in their chosen subjects. however, the questions asked are ones which the man in the street could not be expected to answer. Yet regardless of their level of difficulty, the questions are all similar in structure in that they demand a brief answer which takes the form of the name of a person or a place, a year when something occurred, a technical term, and so on. Seldom if ever are there

questions asking, for example, why something happened.

Conceptions of knowledge form a very important component of what we call the cultural basis of a society. In its purest and most tangible form knowledge is observable in the educational system. The point in presenting the excerpts from the TV-programme however, was, to illustrate that the dominating conception of knowledge is also visible elsewhere. We find signs of an identical conception in informal discussions with adults who lack personal experience of upper-secondary or higher education. When asked, for instance, what they think university students of mathematics or history are engaged in, some will answer in a way that may make professional mathematicians or historians smile, but which nevertheless reveals a conception that is probably very widespread among people in general. Thus it is not uncommon for people to imagine that university students of mathematics are working on immensely difficult calculations, that they are subtracting or multiplying enormously large

numbers or unbelievably small fractions. Students of history or professional historians are likewise described as persons who know "a hell of a lot of history", that is, they know not only the year of an important historical event, but also the precise date. Further, a sophisticated historian also has to know not only the prominent historical figures, but also their relatives and the year, date and place of their birth.

As well as appearing ingenuous, these answers tell us something about the way experience of schooling influences our way of apprehending knowledge. It is, however, also self-evident that if one lacks any insight into the qualitative change that the content of studies undergoes at more advanced levels one makes a linear—and horizontal—extrapolation from what is known into the unknown.

A comparison between the questions put in the *Double or Quits* programme and the answers given by people with only a basic education reveals that they are strongly related to each other. None of them indicates a qualitative change in knowledge from trivial to advanced levels. The *Double or Quits* questions are basically of the same kind at the beginning and at the end of the game even though they have become progressively more difficult. The difference that can be observed is that the questions become more and more *peripheral* to the phenomenon in question, e.g. knowing the name of a person to whom Chopin dedicated a particular composition must be regarded as being of minor interest compared to understanding the structure of the music.

Difficult questions in these contexts are also *narrower* than "easy" ones, in that they deal with very specific details of an event or minor parts of a phenomenon. This difference between what is trivial and what is advanced is to a great extent preserved when we move into the world of the educational system.

The measurement of knowledge has as long a history as the educational system as a whole. Over the years a number of ways of approaching this problem have been tried, involving both the more technical aspects of educational measurement as well as attempts at more thoroughgoing re-evaluations. Yet if we compare the present state of the art with the past, irrespective of what level of the educational system we refer to, none of the basic characteristics of test items has changed in any dramatic way. There are also very obvious parallels between the demands put on students and on contestants in quiz programmes. These are probably at their most visible in questions representing so-called objective tests, which came into frequent use from the early sixties onwards. Some examples taken from various subjects are given below:

- (A) The capital of Albania is:
  - 1. Belgrade
  - 2. Tirana
  - 3. Lisbon
  - 4. Lagos
- (B) Relate the following South America countries to the product

which is their most important export:

- Venezuela
   Chile
   Copper
   Coffee
- 3. Brazil c. Oil

(C) Complete the sentence below by filling in the missing information: The Swedish King Gustav II Adolf was killed in the battle of . . . in a long war between Sweden and . . . which ended with the . . . peace treaty in the year . . .

Many teachers will probably recognize their own way of constructing examination test items in these examples. They will also be aware of the reasons why questions are presented in that form, and to a large extent these reasons are simply pragmatic. Test items should be easy to construct, to answer, and to mark.

A less obvious reason for this form of question is that it is symptomatic of a conception of knowledge which has a long tradition in education as well as in quiz programmes. This conception, which was introduced in Chapter 1, can be characterized as quantitative and reproductive. The degree of difficulty sought is achieved by formulating questions which refer to low-frequency, peripheral and narrow information. Generally speaking, neither understanding nor analytic ability is required of the respondent. That would create problems of judgement for the teacher or the compère of the quiz programme. It is much easier if answers are recognizably right or wrong.

This widely held and culturally deep-rooted view of knowledge is found in the study of Perry (1970) which was described in Chapter 1. Perry found freshmen students generally to have a dualistic conception of knowledge indicated by the expectation that higher education would provide an opportunity to learn to discriminate between true and false, between right and wrong. Many of the students had later abandoned this conception in favour of a relativistic one. The students had recognized that, to a large extent, phenomena are described and explained in different ways even in academic textbooks or by different teachers. The solution to this pluralistic world of competing explanation lies in a personal commitment whereby students take individually distinctive interpretive stances in deciding how to make sense of central phenomena in their field of study.

Our earlier discussion about the quantitative conception of knowledge suggests that the lower stages of the educational system may be, to a large extent, responsible for reinforcing a dualistic conception of learning.

#### Traditional Psychological Experiments

As we have already seen in Chapter 1, experiments in the psychology of carning have relied extensively on learning materials which have a low degree of meaningfulness. Since the underlying aim has been to arrive at a description of the process of learning in general, this choice has been ustified on methodological as well as theoretical grounds. Hence there is

seldom any description of the outcome of learning other than in purely quantitative terms, thus reinforcing that reproductive conception of knowledge. We can see this clearly in Hilgard and Bower's *Theories of Learning*, an authoritative textbook which was first published in 1948 and is now in its fifth edition (1981). A careful examination of the subject index yields few references to *knowledge*. The most significant entry directs us to the following passage:

A strong emphasis within Gagné's analysis is upon the structure of knowledge, an important supplement to principles of learning whenever a practical instructional task is under consideration.

What is explicitly stressed here is the *process* of learning. Precisely what the subjects are asked to learn is seen as a problem to be considere elsewhere within the separate domain of instruction.

There is an additional reason why so little is said about the outcome of learning in most literature in the field. In accordance with the research tradition which evolved in the natural sciences, it has become the dominant paradigm of the social sciences to reduce the descriptions of complex phenomena to a minimum number of dimensions. 'Intelligence or 'learning capacity' is one such dimension that is considered to be of great importance in describing human functioning. For reasons primarily of experimental design, however, such a dimension has to be content neutral, which means that the content of a learning task has the status of a series of examples which are of little interest in themselves.

Against the background of this view of learning it is also easier to understand why certain materials came to be widely used in empirica studies of learning. Nonsense syllables or, more recently, narrative of descriptive texts specially written for the experiments are essentially homogeneous. Each segment of the material is of equal value, and so the likelihood that any one segment will be recalled in a subsequent retention test is no greater than that of any other. Take the following example:

Circle Island is located in the middle of the Atlantic Ocean, north of Ronald Island. The main occupations on the island are farming and ranching. Circle Island has good soil, but few rivers and hence a shortage of water. The island is run democratically. All issues are decided by a majority vote of the islanders. The governing body is a senate, whose job is to carry out the will of the majority. Recently, an island scientist discovered a cheap method of converting salt water into fresh water. As a result, the island farmers wanted to build a canal across the island, so that they could use water from the canal to cultivate the island's central region. Therefore, the farmers formed a "Pro-canal Association" and persuaded a few senators to join. The Pro-canal Association put the construction idea to the vote. All the islanders voted. The majority voted in favour of construction. The senate, however, decided that the farmers' proposed canal was ecologically unsound. The senators agreed to build a smaller canal that was two feet wide and one foot deep. After starting construction on

the smaller canal, the islanders discovered that no water would flow into it. Thus the project was abandoned. The farmers were angry because of the failure of the canal project. Civil war appeared inevitable. (Thorndyke, 1977)

The performance of a subject in a learning experiment using this text would be judged in terms of the sum of the various questions which could be derived from the text, such as: Where is Circle Island situated? What are the main occupations? Why was the canal built? and so on. An alternative way of testing retention would be to ask students to recount the story and mark the number of correct statements included. In both cases the result is a measure of the degree to which the precise wording of the text is remembered. Thus the degree of isomorphy between the atimulus (the text) and the response (its retention) has been the chief interest of learning researchers.

If a similar text were to be used in an educational setting, the measurement of the learning outcome would probably be of the same kind. Even if a task such as "Write a short essay about Circle Island" were assigned, the judgment would probably be based on a scrutiny of how many items from the text had been included in the essay.

Consider, however, the following excerpts from an undergraduate textbook:

If all farmers work hard and nature cooperates in producing a bumper crop, total farm income may fall, and probably will.

Attempts by individuals to save more during a depression may lessen the total of the community's saving. (Samuelson, 1973 p. 14)

These two sentences are taken from one of the most widely used university textbooks in Economics. If a group of students were asked to explain why the sentences are correct, even though they appear to be false, the probability of a correct answer would be highly related to whether the students had understood the principles of Economics that could be applied. It is, however, still the case that a typical test question based on these statements would be of the form "Name the principle in Samuelson's first chapter which is exemplified in these two statements". A question of that kind would not enable a teacher to judge which students had really understood the meaning of the examples.

#### A Qualitative Conception of Learning

Is obvious from this comparison of different kinds of texts—and of different purposes in reading a text—that prose learning is not an emogeneous phenomenon. Psychological research, in its attempt to evertigate learning processes in a 'pure' form, has restricted its definition learning. By using materials with little or no inherent meaning, such experiments describe and explain only how students set about learning then the task has been drained of meaning. Yet most human learning depends on meaning and it is directed towards it. To learn is to strive for

meaning, and to have learned something is to have grasped its meaning. In spite of this dominant interest in learning defined as a quantitative phenomenon, since the time of Bartlett (1932) there has also been a concern with learning defined in qualitative terms. Bartlett investigated the ways in which students recounted a story they had read. The differences in the form of these responses led Bartlett to abandon the conception of memory as a reproductive storage mechanism, where every impression with all its specific characteristics is stored in a defined, neural region. Instead Bartlett's conception of the memory depends on the reconstruction of meaning in terms of schemata which represent personal reinterpretations of the learning material.

The qualitative approach to research on learning which is reported in this book represents a development of Bartlett's conception. It rejects the description of knowledge as discrete pieces of knowledge passed passively from teacher to learner, and tested in terms of whether or not the student can reproduce verbatim those elements. Instead of concerning itself with "how much is learned", it seeks to investigate "what is learned". Necessarily this qualitative type of research is concerned with the learning of realistically complex passages which contain a description or an explanation of a phenomenon. If students are given such a text and asked to read it carefully in order to be able to answer questions about its content, it is possible to investigate "what is learned" in a naturalistic setting—an experimental situation in which both content and instructions are closely similar to what students normally experience in higher education.

The next step in the research process depends on generating data about how the subjects have understood the content of the text. The need for intensive and deep information places limitations on the choice of methods. The general research strategy has been to use semi-structured or thematic interviews which are tape-recorded. Identical introductory questions on each topic are followed by questions aimed at eliciting answers in more depth. Depending on the structure and comprehensiveness of an initial answer the interviewer may have to ask for clarification, elaboration or examples. The interviewer must, however, avoid giving any clues about the desired direction which the process should lead. The tape recordings are then typed up and the resulting protocols—once they have been checked by the researcher—constitute the data on which analysis is carried out.

The aim of the analysis is to yield descriptive categories of the qualitative variation found in the empirical data. The process involves the reduction of unimportant dissimilarities e.g. terminology or other superficial characteristics, and the integration and generalization of important similarities i.e. a specification of the core elements which make up the content and structure of a given category. Some examples of this kind of analysis will be presented below.

Many of the studies carried out in Gothenburg during the first half of the 'seventies took the form of text reading experiments. Thus in one investigation (Marton, 1975b: Marton et al., 1977) forty students of

education were asked to read an article from a Swedish newspaper. The article (which was written by Urban Dahllöf, a Swedish professor of education) was a contribution to a debate about a reform in the Swedish system of higher education. The article can be summarized as follows.

By reanalysing the empirical data used in an investigation initiated by the National Board of Universities and Colleges, Dahllöf arrives at a conclusion which differs from that drawn in the original study. In that study the pass rate of students was found to be very low in the faculties of liberal arts and social science. The pass rate was however considerably higher in more vocationally oriented fields such as medicine, civil engineering, etc. It was therefore concluded that the pass rate could be improved if a number of fixed combinations of subject areas was introduced, in order to make schemes of study in the "free" faculties similar to their more vocational counterparts.

In his re-analysis of the data, Dahllöf makes the assumption that many students who enter the system of higher education do so without the intention of graduating, but only to study a particular subject over a number of terms. Dahllöf excludes from the empirical material students older than twenty-five on the assumption that, at that age, they have probably already gone through some kind of post-secondary education and want to complete that education with a few terms of university studies. Although this group of students are officially defined as drop-outs, that definition does not match their own intentions. Furthermore, Dahllöf splits the data into sub-groups according to university, sex, subject area, and grade point average from upper secondary school. He thus finds that there are large differences between the different sub-groups. Some have a very low pass rate and some have a pass rate which is similar to that found in the medical or engineering faculties. Dahllöf draws the conclusion that if the purpose of the reform is to raise the pass rate in the faculties of humanities and social science, selective rather than general measures should be taken. The grounds on which he therefore challenges the wisdom of the reform are that a closer look at the empirical data shows that the situation is satisfactory as far as many groups of students are concerned, and very problematic in the case of others.

In the learning experiment students were invited, individually, to read Dahllöf's article carefully at their own pace. They were asked to read it in their usual way, but they were told that they would be asked questions about it afterwards. They were then interviewed and asked questions initially about the general meaning of the article—"Try to summarize the article in one or two sentences. In other words what is the author's intention?" Other questions related to specific aspects of the article and to the processes of learning. Here we are concerned only with the analysis of the extent to which the main point of the article could be recounted.

By applying a rigorous qualitative analysis, the students' responses can be grouped into a number of categories, according to the basic underlying structure expressed. This means that the protocols have to be studied with the intention of understanding what the students are expressing,

irrespective of what words or examples they may use, which may show a considerable variation even between answers belonging to the same category. Starting with a comparatively large number of categories the researcher will gradually refine these, arriving at a smaller set of categories that may finally be difficult or impossible to collapse further. In the case of the Dahllöf article, the empirical analysis of students' answers vielded four categories of outcome:

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- A. Selective measures should be taken.
- B. Differential measures should be taken.
- C. Measures should be taken.
- D. There are differences between different groups of students.

What then differentiates these categories one from another? Clearly there is a hierarchical relationship between A, B and C with regard to their degree of specificity, in that selective measures (A) are a special case of differential measures (B) while the same relation is applicable also for B in relation to C. Category D, on the other hand deviates from the others by expressing only an aspect of the empirical data. Categories A and B both involve the use of evidence in support of conclusions, while categories C and D represent descriptions. The C-answers may appear conclusion-oriented but the very general conclusion that 'measures should be taken' is not rooted in the empirical data, but is rather a kind of addition to the reported main point about the differences in pass rates. In other studies (Dahlgren, 1975; Säljö, 1975; Marton, 1976a; Svensson, 1976) categories of outcome have been reported which occupy a level below that of description. Instead, there is a reliance merely on mentioning elements remembered from the text.

The range of categories of response found in this study (and in other similar investigations) can be described as the outcome space for the text concerned. The outcome space provides a kind of analytic map of variations in what has been learned from a given learning task. It is therefore an empirical concept which is not the product of logical or deductive analysis, but instead results from intensive examination of empirical data. Equally important, as used here, the outcome space is content-specific: the set of descriptive categories arrived at has not been determined a priori, but depends on the specific content of the learning material. Indeed it should be stressed that, as Entwistle (1976) has observed, "the verb to learn takes the accusative (case)." There is no learning without a content, and thus no phenomenon of learning per se.

#### **Structural Aspects of Outcomes of Learning**

This does not mean that differences in outcome are wholly content-based. Although the categories which summarize each level of outcome may also preserve (as in the case of the Dahllöf article) a description of the content, more general structural differences can frequently be identified. For example, as we have just seen, outcomes can be categorized as conclusion oriented, descriptive or mentioning, and such differences can

also be said to represent distinct levels of outcome. Similarly sets of outcome categories can sometimes be shown to represent hierarchies. where outcomes are related one to another in terms of their degree of specificity, inclusiveness or completeness.

Our next two examples are both to varying extents concerned with the

structural properties of differences in outcome.

The first is a study by Wenestam (1980). Like many of the Gothenburg studies, it is a text-related analysis of the content of learning. Instead of making use of a single text, however, Wenestam selected four texts which share a common structure; each describes a particular principle which is then illustrated by an example. The texts vary in length from two to six pages, but in each case, the account of the example takes up a substantial proportion of the passage.

One of Wenestam's texts dealt with the scientific work of the physician Ignaz Semmelweis, who is the discoverer of micro-organisms as the origin of the epidemic diseases. Semmelweis' discovery and the thought and experimental work that proceeded from it, is used as an example of the scientific way of hypothesis testing by means of the experimental method.

One of Wenestam's questions was:

Try to summarize the text in a few sentences. In other words, what did the author want to say?

Four categories of answers to this question were identified:

- A. The main point of the text (the testing of hypothesis by comparing two conditions where only one factor, the assumed cause, differs) and its relation to the example (the work of Dr. Semmelweis and the mode of action in his investigations) has been understood.
- B. The main point of the text has been understood but not its relation to the example.
- C. The main point of the text has not been understood but some other main point has been described in a rather general way (e.g. it is about the causes of a phenomenon: or a method for the solution of a problem).
- D. The focus is on one or more of the concrete examples (e.g. it describes a doctor at a hospital in Vienna who worked to find the cause of the high mortality rate in childbed fever among women in labour; or the necessity of maintaining a high standard of hygiene).

This result i.e. the gradual weakening of the importance of the principle and the successive upgrading of the example from categories A-D, was an important aspect of the variation in the answers on all four texts used by Wenestam. It exemplifies a tendency which we have termed horizontalization. In texts such as these, the intention is to convey a principle. Examples have a subordinate function, which is to illustrate the principle outlined. In horizontalization, however, this hierarchy is not preserved; no distinction is made between the status of the principle and the status of the example.

It seems probable that horizontalization is not confined to learning involving a specific kind of text, but is to be found more widely in formal education. Teachers undoubtedly both hope and believe that the examples or metaphors they use to illuminate a given principle will prove less enduring than the principle itself, but how often this actually occurs is open to doubt. The striking concrete example may turn out to be more memorable than the imperfectly understood abstract principle it was meant to illustrate. Yet though horizontalization seems to reflect a structural difference of a given kind in the quality of learning outcomes, it should be stressed once again that such differences have to be looked for in relation to specific content and depend, moreover, on empirical analyses of outcomes. There have been attempts to establish general taxonomies (Bloom, 1956; Gagne, 1977) through which the content of different learning tasks can be analysed, but such taxonomies are of little relevance here, for they represent logical analyses of the content and processes of learning. They do not derive from studies of the different outcomes arrived at for a given subject-matter.

In this respect, a recent Australian study by Biggs and Collis (1982) is an evident exception. Their SOLO taxonomy (in which SOLO is an acronym for the Structure of the Observed Learning Outcome) is an attempt at empirical classification of levels of outcome in a form which has wide applicability. The theoretical basis of Biggs and Collis' taxonomy derives in part from the stages in cognitive development described by Piaget and in part from theories of information processing (Schroder et al., 1967). Breaking away from Piaget's use of stages to describe the developmental level of an individual child, Biggs and Collis seek to describe the range of answers given to a specific question - in our terms the 'outcome space'. They assume that such levels have a general reality, irrespective of content and question form, and describe five categories as follows, with increasing levels of sophistication.

1. Pre-structural. In relationship to the prerequisites given in the question, the answers are denying, tautological, and transductive. Bound to specifics.

2. Uni-structural. The answers contain "generalizations" only in terms

of one aspect.

3. Multi-structural. The answers reveal generalizations only in terms of a few limited and independent aspects.

4. Relational. Characterized by induction, and generalizations within a

given or experienced context using related aspects.

5. Extended abstract. Deduction and induction. Generalizations to situations not experienced or given in the prerequisites of a question.

Biggs and Collis provide several examples from different school subjects showing how the SOLO taxonomy may be applied in analyses of learning outcomes. One of these examples is an analysis of the answers given to a question which asked why the side of a mountain that faces the coast is

usually wetter than the side facing the interior. The following responses illustrate the five categories described above.

- Because it rains more on the coastal side.
- 2. Because the sea breezes hit the coastal side first.
- 3. Because the sea breezes contain water vapour and they first strike the coastal side and so it rains on them and after that there's no rain to fall on the other side.
- 4. Because the prevailing winds are from the sea and they pick up moisture and as they meet the mountain they're forced up and get colder, the moisture condenses, forming rain. By the time the winds cross the mountain they are dry.
- 5. This is likely to be true only if the prevailing winds are from the sea. When this is so, the water vapour evaporated from the sea is carried to the mountain slopes, where it rises and cools. Cooling causes the water vapour to condense and deposit. Not only is the wind now dryer, it is then carried up the mountain further, is compressed, now warm, and thus is relatively less saturated than before: the effect is similar to the warm climates experienced on the Eastern slopes of the Rockies in Canada in winter. However, all this makes assumptions about the prevailing wind and temperature conditions: if these were altered, then the energy exchanges would differ, resulting in quite a different outcome. (Collis and Biggs, 1979, p. 11)

The authors conclude that,

These responses are increasingly better in quality. The first is not incorrect, but it tells you nothing about the quality of learning: it could have been given by a student who hadn't learned anything from the lesson. The second presents one relevant fact, the third several; neither gives an adequate explanation. The fourth response gives an interconnected and logical explanation, but as the fifth response makes clear, it could be an incorrect overgeneralization. The fifth response considers all aspects, including some not given in the original lesson (let us assume, it introduces general abstract principles that cover both this situation and others; and it considers alternative possibilities to that implied in this question). (Ibid pp. 11–12.)

The SOLO taxonomy represents a general structural analysis of the outcome of learning, as a complement to content-oriented analyses of the kind undertaken in the experiment which used the Dahllöf article. However, the great strength of such a taxonomy—its generality of application—is also its weakness. Differences in outcome which are bound up with the specific content of a particular learning task may remain unaccounted for.

In some of our analyses (e.g. Dahlgren and Pramling, 1982) structural differences in outcome similar to those represented in the SOLO taxonomy can be observed, and yet differences dependent on the specific

content are repeatedly found. And other recent analyses (Pollitt et al., 1984) have shown how the form of an examination question affects the outcome space 'available' to the student. Thus although structural similarities may be useful up to a point, they are likely to be more informative in their instructional implications, if they are combined with content-specific characteristics.

#### **Outcomes as Conceptions**

The content-specific analysis of outcome is important in another fundamental aspect. In some analyses, the categories of outcome arrived at can be considered as representing qualitatively distinct *conceptions* of a phenomenon. In other words, each constitutes a particular way of viewing and thinking about an aspect of the surrounding world. This is best illustrated by a study (Dahlgren, 1978) which ranged beyond the confines of a text-based learning experience. In this study, university students of economics were asked the apparently simple question:

Why does a bun cost about one (Swedish) crown?

In this case two categories of outcome accounted for the qualitative variation in the students' answers:

- A. The price is dependent on the relationship between the supply of and demand for buns.
- B. The price is equal to the (true) value of the bun.

Answers in category A represent a conception of price as system-dependent, in that the price of a commodity is unknown until it is subject to a bargaining situation between producers and consumers in the market. Neither the costs of production nor customers' willingness to pay a certain price can alone determine the price. In the long run the price is determined at the point where customers and producers agree that goods or services will be bought and sold.

The category B answers on the other hand reveal a more object-oriented conception of price, for these answers state that the price depicts the production costs and reasonable profits on the various constituents, whether they be products or services. In a sense this also means that B-answers give expression to a product-oriented conception of price. The B conception is one which is commonly found in everyday situations. It is often used, for example, by salesmen of luxury goods like oriental rugs or paintings. As a customer you may hear for example that "this beautiful rug used to cost £1000 but we're only going to ask for £800". What is actually said, or what should have been said if we strive for a more correct description from an economic viewpoint, is that "we tried to sell this rug for £1000. It turned out, however, that that was a wrong price on the market we operate in, so now we are making a new attempt at the level of £800".

To sum up, these two categories of outcome are not just variations in what has been learned from textbooks, but represent two distinct and

contrasting conceptions of a real-life phenomenon. The earlier examples can be viewed in the same way. In the case of the article by Dahllöf, for example, the variations in outcomes constitute different conceptions of Dahllöf's analysis of the shortcomings of an impending reform measure. What distinguishes the example on the price of a bun, from the preceding example, however, is that the phenomenon concerned occupies a relatively wider and more prominent position in everyday life — and thus more obviously draws on our experience and understanding of the surrounding world that is not confined to a particular text or set of learning materials. But in each case, the outcome does not amount to the retention or non-retention of a disembodied fact which has no meaning beyond itself. Instead, the phenomenon is invested with a specific meaning that both reflects and colours how the phenomenon is thought about.

From this same perspective, we can go further and define learning itself as a change in conception. In other words, when learning has occurred, there is a shift from one conception to another which is qualitatively distinct. Thus a student who had held conception B prior to an economics course and who is subsequently shown to display conception A has achieved more than the acquisition of an understanding of the laws of supply and demand. For the student, the phenomenon of price is now looked at in a fundamentally new way. Thus learning, within this perspective, is not a discrete and self-contained entity but one which has the potential of enabling individuals to consider afresh some part or aspect of the world around them.

#### The Effects of Education on Conceptions

But to what extent do learning experiences in formal education result in changes in conception? In reviewing the findings of the study of the introductory economics course (Dahlgren, 1978), we had concluded on a fur from optimistic note. The main change we had observed was in the students' use of the terminology of economics. There was little evidence of qualitative changes in the students' conceptions of phenomena which had had a central place in the content of the course. Clearly, if these particular findings were representative of the effects of education in general, a reappraisal of the form and content of curricula seemed to be called for (Dahlgren, 1978, p. 18). And, indeed, similar findings were obtained in an investigation involving mechanical engineering students by Johansson et al. (1983). By choosing the seemingly trivial but very fundamental physical concept of force, they demonstrated that although it was taken for granted that the students held the Newtonian conception of force (i.e. that a force is only involved in physical events where there is a change in velocity or direction), some of the students were in fact found to hold a different conception.

One of the questions put to the students was:

A car is driven along a motorway in a straight line at a high constant speed. What forces act on the car?

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An analysis of the answers yielded two categories of conceptions of a body moving at a constant velocity. A body in this kind of motion was apprehended either as

A. Having a constant velocity, due to the equilibrium of forces (When he drives at a constant speed all the forces counterbalance each other).

or

B. Moving, due to a "motive inequilibrium" of forces. (And then a force that is directed forwards which has to be greater than those . . . forces directed in the opposite direction, otherwise it wouldn't move forwards).

Of the 22 students who were asked questions about bodies moving at a constant velocity, a total of 7 gave B answers at the first interview (prior to the course in mechanics) and 6 at the second interview (after the course had finished). Although the outcome on other questions (e.g. the case of decelerated motion, illustrated by an ice-hockey puck gliding straight forwards on smooth ice) was more positive, it seems nevertheless remarkable that a significant proportion of the students could preserve an Aristotelian conception of force.

The effects of formal education on conceptions have also been investigated by Hasselgren (1981), in a longitudinal study. His study focused on the structural level of the subjects' conceptions. A group of pre-school student-teachers were asked to describe what they saw in video-tape sequences of children at play. The sessions were repeated three times; at the start of the course, in the middle of the second term, and at the beginning of the third and final term. A group of physiotherapy students constituted a control group. In interviews following the video-tape sequences, the subjects were questioned about what they had seen. The transcripts of the taped interviews were analysed and a set of four categories of outcome were identified (Hasselgren, 1981, pp. 50–52):

- A. An abstracting description. In relating the content of the videorecordings, what is shown on the screen is not taken for granted, but instead is considered as a concrete illustration of a principle or abstract idea which might be applied to the material.
- B. A chronological description. The activities of the group of children are understood as a chain of events, following a temporal sequence.
- C. A partialistic description. The account given deals with a part rather than the whole of the video-tape, often by focusing only on the actions of one of the children.
- D. A fragmentary description. The account is impressionistic and diffuse, lacking an identifiable perspective and only mentioning what is immediately observable. The children, their play, and the setting in which they are playing, are given equal importance.

In Hasselgren's analysis, these four categories are considered as forming a developmental sequence, in which there is progression from either the fragmentary or partialistic description to the chronological description, and hence to the abstracting description. His analysis shows a substantial difference in the patterns of regression, stability and development for the experimental and control groups as shown in Table 2.1. There were only five instances of regression, all confined to the control group, and a very much higher rate of instances of development amongst students in the experimental group. Hasselgren therefore concludes that the formal educational experiences undergone by the experimental group have had an impact on their way of apprehending a phenomenon that is central to pre-school teacher education.

Table 2.1

Distribution of changes representing regression, stability or development (from Hasselgren, 1981, p. 63)

	Category				
Group	Regression	Stability	Development	N	
Experimental		37	19	56	
Control	5	23	3	31	

An attempt at summarizing research evidence on the effects of education, within the qualitative perspective adopted here, leads to the following observations:

- Education does have an impact as far as the acquisition of subject-specific terminology or the mastery of problem-solving algorithms are concerned, and such outcomes may be the most permanent of any effects which can be identified.
- Conceptual changes are undoubtedly more difficult to trace. Such changes do take place but are probably relatively rare, fragile and context-dependent occurrences. (Dahlgren, 1978; Brumby, 1979; Johansson et al., 1983).
- Nonetheless, at a macro-level of analysis, education has demonstrable effects in terms of structural properties of the ways in which phenomena are apprehended. (Perry, 1967; Hasselgren, 1981).

These conclusions have also been drawn in a much more comprehensive review of research on the effects of higher education (Dahlgren, in press).

#### The Qualitative Analysis of Learning

Having provided some examples which illuminate the kind of results about learning that a qualitative analysis can yield, we may make an attempt to integrate the conception of learning and knowledge that springs out of that perspective.

The first point to emphasize may seem obvious, but is sometimes ignored: learning is a many-sided phenomenon. Just as there are many different things to learn about, so too are there different processes of learning and different outcomes of learning. In this chapter we have tried to contrast two main categories of learning. On the one hand there is learning from materials that lack an internal order which might permit us to talk about meaningfulness. In such cases the learning process involves pure memorizing either by dint of constant repetition or by imposing some kind of meaningfulness, often through the use of mnemonic strategies.

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But a substantial proportion of learning depends on understanding material which does have an internal structure that can be grasped. In these cases the process of learning should aim at finding this structure in as deep a sense as possible. This is a qualitatively different kind of learning which will result in a different outcome. The nature of this outcome is that it represents a conception of a phenomenon in the surrounding world. A conception can in principle mean those very superficial characteristics of a phenomenon such as size, shape or colour. Here that conception is taken rather to denote the nature of an object or an event.

To "understand" or "accept" the colour or the size of an object is a process of a totally different kind than to understand its nature. In the latter case, what is pivotal to understanding is the grasp of the relationships between a phenomenon and its context. External or concrete characteristics of a phenomenon do not alone provide a basis for understanding. In this respect everything is always a part of something larger or more inclusive (i.e. it has a meaning beyond itself) and it is this which makes up what we might call the context of understanding. Meaningfulness is thus not an inherent property of nature or culture. It is imposed by human consciousness, which is itself evolving continually. Learning, then, should be regarded as that aspect of human life through which the environment — or man himself — appears with a higher degree of meaningfulness than before. From this perspective — as in some others too (cf. Popper, 1972) — knowledge is nothing but a series of occasional, provisional steps towards what is often described as an unreachable complete knowledge about reality. Similarly a conception, as Marton (1978) describes it

... often denotes the implicit (tacit), that which does not need to be expressed or cannot be expressed because it has never been the object of reflection. (p. 20)

This chapter has shown how it is possible to describe what is learned in terms of sets of categories which can often be differentiated in terms of their structural properties. Such structural differences would seem to hold open the possibility of devising empirically derived taxonomies, such as SOLO, which would allow the quality of a wide range of learning outcomes to be systematically analysed. Yet our research has drawn attention to variations in outcome which cannot fully be understood

except in relation to the content of learning. Analyses of learning outcomes in relation to content enable us to describe variations in the conceptions students hold about important parts of their course. These analyses also suggest that, at present, formal education is not as successful as it might be in helping students to develop more sophisticated conceptions. When the questions asked of students are at base quantitative or fail to penetrate beyond what can be more or less unreflectively retained in the memory, students' misapprehensions are disguised within spuriously satisfactory answers or cloaked in technical jargon. More searching questions, though framed in a direct and straightforward way, show up fundamental misunderstandings. Thus a study of qualitative differences in outcome has a vitally important role to play in helping to determine — and ultimately improve — the quality of student learning.

#### CHAPTER THREE

#### Approaches to Learning

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#### **Explaining Differences in Outcome**

How can we account for the qualitative differences in the outcome of learning described in the previous chapter? Let us take the first of our own studies as an example. Students were asked to read an article on university reform intended to bring the pass rates of universities more in line with those of polytechnic institutes (see page 25). As there were substantial differences in pass rates between different groups within universities, the author argued that improvement in pass rates at universities, if necessary at all, would depend on taking selective measures, i.e. measures directed towards the groups with low pass rates and not towards those whose results were satisfying. As we have seen, four qualitative different outcomes were identified (Marton, 1974; Marton & Säljö, 1976a):

- A. Selective measures should be taken
- B. Differential measures should be taken
- C. Measures should be taken
- D. There are differences between different groups of students

Now, how did these differences in understanding come about? Those whose answer was of the C-variety, for instance, obviously thought that the author was arguing for something which, in reality, he was arguing against (i.e. general measures). This observation could be seen as a reminder of the kinds of problems one finds when analysing in detail how people read texts and how they learn. Those with a D-kind of understanding, furthermore, seem to have totally missed the point that the author was arguing for anything at all. Probably, they assumed that he simply wanted to describe something, to convey information.

The most obvious explanation of why such variations in understanding arise would be to argue that learning depends on prior knowledge. Thus the differing outcomes could be explained in terms of differing levels of knowledge or linguistic skills. Although such an argument may be true in a general way, it cannot explain the results of this experiment. The article here was chosen specifically because the language used was simple (it was an article taken from a daily newspaper), and because the prerequisite knowledge could reasonably be assumed to be available to all the students (it was about a widely debated university reform).

After having, at least tentatively, ruled out that explanation, the next

one again seems fairly obvious. The students understand the text in different ways because the students themselves differ; above all some are brighter than others. Apart from the fact that the text could hardly be called intellectually demanding, the proposed "explanation" could be no more than a statistical correlation at best. This type of explanation does not illuminate the fundamental question of how the different ways of understanding the text have come about.

If the outcome of learning differs between individuals, then the very process of learning which leads to different outcomes must also have differed between individuals. This is a fundamental assumption underlying the line of reasoning pursued in these studies. The most obvious explanation of the differences in outcome should derive from a description of the differences in the process that led to the different outcomes.

After having reached such a position, we still face a highly important question concerning the strategy of research: What does it take to describe differences in the learning process? Of course, we could have had a theory or a model of processes involved in learning by reading a text. We could have attempted to test that theory or model by ceteris paribus varying one factor at a time between one or several experimental and control groups. In fact we did not have any such theory or model to test in an experimental setting. On the contrary, we started from the assumption that the functional background of differences in the outcome of learning in natural study situations was still largely unknown. In consequence we had to try to find out in what way students function differently in such situations. But what sources of information could we find in order to be able to answer this question?

Observing students engaged in studying is really not a very rewarding research method. There is simply not much to observe. We can measure the time spent on reading the text, we can examine the underlinings and notes made, but such data do not provide useful information. External data of this type do not form a pattern systematically related to the outcome of learning (see Svensson, 1976). And, indeed, there are no good reasons why they should.

#### The Original Experiment

There are, then, basically two alternatives left for collecting data about what the students actually "do" when trying to learn from a text. One is to scrutinize the various qualitative aspects of the students' performance, of the outcome of learning, in order to be able to make inferences of the type "to recall this, or understand that, the student *must* have proceeded in this or that way". This was one of the methods used by Svensson (1976, 1977) which led him to the conclusions discussed in the next chapter. Here we shall consider results derived from the alternative strategy (Marton, 1974). Students were asked to recount how they had been handling the learning task and how it appeared to them. To ask the students to describe how they had been handling the learning task is to

some extent tantamount to asking them how the learning task and the learning situation appeared to them, because it is the only language in which questions about what we do when we try to learn by reading a text can be answered. Answers to such questions are not of an introspective nature; there is just no way in which we can look into ourselves. What we can do instead is to say how the world appears to us and this was exactly what the students did in our experiments.

The basic methodology was introduced in the previous chapter. Students were asked to read the article, knowing they would be asked questions on it afterwards. Besides the questions about what they remembered of its content, students were also asked questions designed to discover how they had tackled this task. They were asked, for example:

Could you describe how you went about reading the text?

Was there anything that you found difficult?

Did you find it interesting or not?

While reading, was there anything that struck you as particularly important?

Each student participated in an individually run session and all the conversation between him or her and the experimenter was recorded and transcribed verbatim subsequently. The transcripts of the students' answers to these and other similar questions made up the data base for our attempt to answer the main question dealt with in this chapter; how did the students arrive at those qualitatively different ways of understanding the text read?

#### **Methods of Analysis**

The first phase of the analysis, which was supposed to lead to the results searched for, was a kind of selection procedure based on criteria of relevance. Comments which seemed in any way relevant to our enquiry were identified and marked. The meaning of a comment could occasionally lie in the words themselves but, in general, the interpretation had to be made in relation to the context within which that comment had been made. Svensson and Theman (1983) offer an illuminating example of the way in which the same utterance may take on different meanings in different contexts.

The phenomenon in question ("differences in the learning process accounting for the differences in outcome") was thus delimited and interpreted in terms of interview extracts which were selected quotes from the interviews with the students, while the quotes themselves were delimited in terms of the context from which they were taken.<sup>1</sup> The quotes thus selected made up a pool at this stage, a pool which formed the basis for the next crucial step in the analysis. The researcher's attention was now shifted from the individual students (the interviews which had lent meanings to the quotes by being their contexts), to the meanings embedded in the quotes regardless of whether these different meanings originated from the same individuals or not. The boundaries

between individuals were thus abandoned and interest was focused on the "pool of meanings". In this way, each quote had two contexts in relation to which it had to be interpreted. First it depended on the interview from which it was taken and then on the "pool of meanings" to which it belonged. The interpretation was thus an iterative procedure which went back and forth between the two contexts for each unit of analysis.

The first phase of the analysis was thus a selection procedure carried out within each interview (though taking the other interviews into consideration as a background). The second phase was the shift of attention from the individual interview to the "pool of meanings" consisting of the relevant quotes selected. Then came a third phase which involved a decision about the specific level at which the quotes should be seen in relation to each other. (The different phases were not, of course, strictly sequential. There was a good deal of overlap as the iterative procedure progressed.) The differences in the outcome of learning referred to in the previous chapter were described at a certain level and if we were to find the differences in the process of learning accounting for those, we would have to aim at a description at the same level, and outcome and process would have to be described in a comparable way.

There are obviously differences at different levels. There are differences in the way people express themselves and there may be differences in their general orientation, but our interest did not focus on either of these two levels. Differences in outcome had been described in terms of the different ways in which the message of the text read had been understood. We were now searching for differences in the process of learning leading to these differences in outcome. We thus had to look for the different ways in which the process leading to these outcomes had

been experienced.

When scrutinizing "the pool of meanings" at this particular level, a pattern of a hierarchy of similarities and differences in meaning may ultimately emerge. We do not believe there is any uniform technique which would allow other researchers to go from "the pool of meanings" to the emerging pattern of a hierarchy of similarities and differences. It is a discovery procedure which can be justified in terms of results, but not in terms of method. In Chapter 1 it was introduced as 'rigorous qualitative analysis'.

#### **Levels of Processing**

In the specific case we are dealing with here, all our efforts, all our readings and rereadings, our iterations and reiterations, our comparisons and groupings finally turned into an astonishingly simple picture. We had been looking for an answer to the question of why the students had arrived at those qualitatively different ways of understanding the text as a whole. What we found was that the students who did not get "the point" failed to do so simply because they were not looking for it.

The main difference we found in the process of learning concerned whether the students focused on the text in itself or on what the text was about; the author's intention, the main point, the conclusion to be drawn. Their focal point of attention was on the pages in the first case and beyond them in the second. The first way of setting about the learning task was characterized by a blind, spasmodic effort to memorize the text; these learners seemed, metaphorically speaking, to see themselves as empty vessels, more or less, to be filled with the words on the pages. In the second case, the students tried to understand the message by looking for relations within the text or by looking for relations between the text and phenomena of the real world, or by looking for relations between the text and its underlying structure. These learners seemed to have seen themselves as creators of knowledge who have to use their capabilities to make critical judgements, logical conclusions and come up with their own ideas.

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Some quotes will serve to illustrate the first way of experiencing the learning situation:

... the only thing I was thinking about was that I'd got to hurry. What happened was that I read a couple of sentences and then I didn't remember what I'd read because I was thinking all the time. "I've got to hurry to get this done" ... I kept on thinking that I'd got to remember what I'd just read, but (then I would wonder) "how am I going to remember this now". "I won't remember anything" is what I thought more or less in several places.

Well I only concentrate on trying to remember as much as possible . . .

You get distracted. You think "I've got to remember this now". And then you think so hard about having to remember it: that's why you don't remember it.

In a later study carried out at Lancaster similar extracts were used to describe similar experiences (see Entwistle, 1981).

"In reading the article I was looking out mainly for facts and examples. I read the article more carefully than I usually would, taking notes, knowing that I was to answer questions about it. I thought the questions would be about the facts in the article . . . . This did influence the way I read; I tried to memorize names and figures quoted, etc."

"I tried to concentrate — too hard — therefore my attention seemed to be on "concentration" rather than on reading. thinking, interpreting and remembering, something I find happening all the time I'm reading text-books."

These students did not try to understand the text, they tried to memorize it. Their awareness skated along the surface of the text. Their only aim was to be in a position to remember it later when they would be asked questions about it. It should be remembered that the instructions

put no time constraints on the students and yet the quotations show experiences of heavy time pressure. The intention to memorize the text, however, contains a paradox. The students often have the feeling that they will not remember, just because they are trying so hard to remember. And, indeed, this is exactly what happens. (This most extreme form of concentrating on the surface of the presentation, characterized by a failure to learn due to over-anxiety to perform well, has been called hyperintention). So we found that many students were not even trying to understand the message and, so, in consequence, they did not understand it. On the other hand, they tried hard to remember the text, yet failed to do so. (This is because the less meaning something has for us the harder it is to remember it.)

The analysis also allowed us to identify an entirely different way of tackling the article. Some students were trying to understand the message. They were not trying to memorize the text and yet they remembered it very well. The quotes below, when compared to those above, illustrate the fact that the two groups of students seem to have been engaged in fundamentally different activities in a situation which, from the point of view of an external observer, appeared to be the same for both groups.

... and what you're thinking about then, it's, sort of, what was the point of the article.

... or perhaps I stopped and thought about what they were actually saying ... if there was something I thought wasn't right, and so on. You also stop and then (wonder) if that really follows that, sort of, is it really logical, what they've written. That sort of thing is what you stop for.

Well, it was sort of the whole aim of (the article) — if that is what is meant. The whole aim of the article was what I was thinking of, sort of.

#### Or, from a Lancaster student:

"I read more slowly than usual, knowing I'd have to answer questions, but I didn't speculate on what sort of questions they'd be. I was looking for the argument and whatever points were used to illustrate it. I could not avoid relating the article to other things I'd read, past experience, and associations, etc. My feelings about the issues raised made me hope he would present a more convincing argument than he did, so that I could formulate and adapt my ideas more closely, according to the reaction I felt to his argument."

In these cases, the text is not considered as an aim in itself (as in the earlier quotes) but rather as a means of grasping something which is beyond or underlying it — the author's intention, what it is all about. (For a more detailed and systematic description of these two modes of learning see Marton, 1982).

The 'depth' dimension which was implicit in the hierarchies of learning outcomes was thus also distinguishable in the case of the student's account of the way in which they went about the learning task. The qualitative differences in the outcome of learning were referred to as levels of outcome and the qualitative differences in the process of learning were accordingly called levels of processing. This term was chosen on the basis of a metaphorical resemblance to Craik and Lockhart's (1972) "levels of processing" concept. (They discussed the correlation between the likelihood of the retention of a stimulus material (usually words) and the level at which the learner has attended it, for instance, in terms of shapes, sounds or meanings.)

#### **Relationships between Process and Outcome**

Our search for differences in the process of learning was motivated by the intention to find the functional correlates of the qualitative differences in the outcome of learning. To what extent had we succeeded? First of all, it should be said that even though we were able to discern some differences in the student's experience of learning which we believed to be fundamental, it certainly did not imply that we could use these differences to meaningfully classify all the cases. Quite obviously, there are cases, on the one hand, where the information available in the interview transcript is just not sufficient to tell whether the learner had adopted deep or surface level processing, and there are cases, on the other hand, in which signs of both strategies can be found on the same occasion. In spite of these limitations, we were still able to conclude that there was a very close relationship indeed between process and outcome. Svensson (1976, 1977, and also in Chapter 4) has convincingly argued that the main dividing line, as far as levels of outcome are concerned, lies between categories A and B on the one hand and categories C and D, on the other. This is so, Svensson says, because the fact-conclusion structure, on which the whole article is based, is understood in the first case, but not in the second. And, indeed, the figures in Table 3.1 seem to support this point.

TABLE 3.1
Relationship between level of processing and outcome (from Marton and Säljö, 1976a)

Level of	Lev	el of process	sing	
outcome	Surface	Not clear	Deep	Sub-totals
			5	5
В	1	6	4	11
C	8			8
D	5	1		6
Sub-totals	14	7	9 .	30

One could argue, of course, that the high correlation between process and outcome reflects the way in which the two main categories of levels of processing were found. We had indeed been looking for differences in the students' accounts of their ways of learning which would correspond to the differences found in their understanding of the article read. The close correlation between depth of processing and quality of outcome in learning has, however, during the decade that has passed since the first publication of the first results, been confirmed several times, even in investigations in which process and outcome of learning have been independently assessed (for some of the more recent studies, see Watkins, 1983; van Rossum and Schenk, 1984).

#### Levels of Processing and Approaches to Learning

As was pointed out above, there are two main alternatives for obtaining information about what the students "do" when they are trying to learn from a text. One relies more on the analysis of outcomes; the other identifies processes. So far we have identified two levels of processing on the basis of what the students said about their experience of the learning process. Then, subsequently, process was related to outcome. Svensson (1976) combined these two sources of information in making an independent and simultaneous analysis of the same set of data with the same intention—to explain the differences in outcome. The implications of his findings are discussed fully in the next chapter; here we introduce on this alternative form of analysis. Svensson concentrated first on students' accounts of what they remembered, and from the characteristics of these outcomes, he drew conclusions about the nature of the processes that accounted for what was remembered. The students' own accounts of how they perceived and experienced that process were used only to complement the analysis of performance data. Svensson's analysis again relied on the iterative procedure of rigorous qualitative analysis, but with different "pools of meaning".

In spite of this very different procedure, a similar distinction was reported but with different terminology. Svensson described the main variation in cognitive approach to be between holistic and atomistic. In the holistic approach during reading, students showed indications of a general direction towards understanding the text as a whole—a search for the author's intention, relating the content to a larger context and delimiting the main parts of the text. The indications of an atomistic approach were: focusing on specific comparisons in the text, focusing on the sequence of the text, but not the main parts, memorizing details and, in contrast, clear evidence of a lack of an orientation towards the message as a whole (see Svensson, 1976, p. 93).

Svensson and Marton both used the term 'approach' to describe two distinct forms of understanding, but the categories of process were different (deep/surface, holistic/atomistic). The defining features of the two distinctions were very similar, but there was an important difference in emphasis which led to the differing terminology. The first difference was

in terms of epistemological assumptions. Svensson, as he explains in the next chapter, was concerned to retain evidence of both outcome and process within his initial analysis. Marton concentrated first on process, before examining relationships with outcome. The differing sets of data yielded by the two distinct research strategies produced one dichotomy (deep/surface) which emphasized referential aspects of students' experiences—their search for meaning or not, while the other (holistic/atomistic) concerned organizational aspects—the ways in which they organized the informational content of the article in their reading.

The two aspects are normally inextricably mixed. In order to understand a text, we have to integrate, to reorganize, to see the passage as a whole. It was therefore no surprise to find a close empirical relationship between the two sets of categories. In terms of outcome 29 out of 30 cases were categorized in the same way, while there was complete agreement for 25 out of the 30 categorizations of cognitive approach or levels of processing (see Marton, 1976b, p. 17).

Subsequently, the distinction between the surface and deep levels of processing was included in an SSRC research programme at Lancaster directed by Noel Entwistle (Entwistle and Ramsden, 1983, and chapter 9). Early work there led him to the conclusion that the term "processing" was too narrow in relation to the differences in learning described (Entwistle et al., 1979a). He was concerned that the crucial intentional component was not a part of its connotation, for instance. He preferred to use the term approach but retaining Marton's categories of deep and surface. This change also fitted the altered theoretical framework of the work of the Gothenburg group. (It became less and less oriented towards the human information processing school of thought.) This new terminology was thus generally accepted.

At about the same time, Laurillard (1978) and Ramsden (1981) started to investigate approaches to learning in normal study situations in various subjects. As we shall see in later chapters, their analyses produced rather different definitions of the deep/surface dichotomy in everyday learning. The instances occasionally came closer to the difference between an atomistic and a holistic approach than to the original distinction from which they arose. Considering this very close conceptual and empirical relatedness and considering the fact that Svensson had been using the term "approach" from the very beginning, it would appear more correct to talk about surface/atomistic and deep/holistic approaches to learning. Still, we believe that the analytic separation of the referential ("what") aspect, which is the heart of the surface/deep dichotomy, and the organizational ("how") aspect, which is the heart of the atomistic/holistic distinction, remains highly meaningful. Only when they are identified separately can the relationship between them be demonstrated. Indeed Roger Säljö, in Chapter 5, has done just this in showing how a certain meaning-orientation leads to a certain way of organizing (segmenting, delimiting) the text and parts of it and how that way of organizing the text leads to a certain referential meaning being abstracted from it.

#### Approaches to Learning in Normal Studies<sup>2</sup>

The main investigation discussed in this chapter had been aimed at illuminating important functional differences in how students carry out their studies. This was done by setting up an experimental situation intended to resemble everyday conditions in important respects. Consequently it is a most reasonable question to ask, whether the differences found in learning experiments represent central differences in studying at university.

This question has been answered in the affirmative many times. In interviews about everyday studying Marton (1974) found that the same variation in approaches to learning could be discerned, even if the "flavour" was slightly different.

In everyday learning situations "text" takes on a metaphoric sense. The studies as a whole can be seen as the "text", on which attention is focussed, and which is entirely separate from the "real" world. The relationship between surface approach in this case (certainly less intense, immediate, spasmodic) and examination seems to resemble that between surface approach adopted in the experiment and the retention test there:

E: How did you read these books?

S: Yes, I read, there I studied in a way that's typical for what you do when you study for an exam. Well, basic knowledge, sort of, to get in as much as possible.

Those adopting a deep approach in their studies seem to believe, on the other hand, that the idea of these studies is to learn something about reality, to change one's way of thinking about it. For instance

... when you read something, then just afterwards you're not, really not quite sure about it, things. But after perhaps a day or an hour or so as a result of experiences, or events which jog your mind, it sort of works its way into a more solid perception in some way, which you stick to. You don't stick to a conception just after you've read it, then you haven't got any clear conception of it and can't defend it afterwards... And other people's comments provide an impetus to get you thinking along different lines. And they help, even if they don't give you the idea directly...

It was found that there was a close association between a deep approach to studying adopted by freshmen and their success in social sciences courses, in spite of the fact that examination results and qualitative differences in learning can hardly be said to be described in an equivalent way. Svensson (1976, 1977) found a similar relationship between holistic approaches, examination results. He concluded, however, that the relation between approach and examination results is indirect. The direct functional relationship was between approach and study habits, (how much one studies, when one studies, etc.). A holistic

orientation is not a necessary prerequisite for being successful in all the subjects at university. If students have an atomistic orientation, i.e. if they read the course literature without understanding large parts of it, then studying will be extremely boring. Consequently, students with an atomistic approach tend to acquire bad study habits; in particular they do less work, besides using an inefficient approach, and so do not succeed in their studies. The students who combine an atomistic approach with hard work are just as successful in their studies (at least in certain subjects) as are students with a holistic approach. We are not arguing that the deep/holistic approach is always 'best': only that it is the best, indeed the only, way to understand learning materials.

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The ways in which students vary in the processes and outcomes of learning has emerged clearly not just in the Gothenburg studies, but also those reported in later chapters (particularly Chapters 9 and 10). The differences between approaches to learning in different subject areas and in contrasting academic contexts will be considered there, and also in the concluding, integrative chapter.

Now that we have found a difference in the way students learn which we believe to be of fundamental importance, and since this difference goes between two approaches to learning, of which one is clearly preferable to the other, should we not try to make the students who tend to adopt the less appealing approach, change to the more highly valued one?

#### Changing Approaches to Learning

A significant prerequisite for attempting to influence how people act in learning situations is to have a clear grasp of precisely how different people act. In our case, the problem could be phased as: what is it that a person using a deep approach does differently from a person using a surface approach. Or to use a slightly different terminology; in what sense do these two approaches differ as "cognitive projects" (i.e. what the learner is trying to accomplish)?

The picture outlined so far indicates that a significant component of a deep approach is that the reader/learner engages in a more active dialogue with the text. It is as if the learner is constantly asking himself questions of the kind "How do the various parts of the text relate to each other?"; "Is the argument consistent or are there any logical gaps?"; "How does this relate to what I already know?"; and so on. Since one of the problems with a surface approach is the lack of such an active and reflective attitude toward the text, a fairly obvious idea would be to attempt to induce a deep approach through giving people some hints on how to go about learning.

#### Questions in the text

In a study aimed at testing this idea (Marton, 1976a), 30 students taking a one-year integrated course in political science, economy and sociology

served as participants. The learning material used was the first chapter of an introductory text-book in political science that these students were about to read in their normal studies. The participants were randomly assigned to an experimental and a control group.

The procedure adopted for influencing the approach to learning in the experimental group was to have the students answer questions of a particular kind while reading. These questions were of the kind that students who use a deep approach had been found to ask themselves spontaneously during their reading. The questions, which were interspersed between each of the five sections of the chapter, were of the following kind:

What sub-sections do you think there are in this section? (Say where they start and finish).

Can you summarize the content of each of these sub-sections in one or two sentences?

What is the relationship between the various sub-sections?

Can you summarise the content of the whole section in one or two sentences? (ibid p. 43).

It should also be added that the design of this study included an immediate, as well as a delayed, retention test. The latter session took place on the average more than two months after the first one.

This attempt to induce a deep approach through forcing people to answer questions found to be characteristic of such an approach, yielded interesting but contra-intuitive results. At one level it was obvious that the approach taken was influenced by the treatment to which the experimental group was exposed. However, this influence was not towards a deep approach: instead it seemed to result in a rather extreme form of surface learning. The results on both the immediate and delayed retention measurements (which were quantitative measures of knowledge in this case) showed that the control group, which had not been exposed to any attempts at influencing approach, performed significantly better (see Table 3.2).

TABLE 3.2 Number of items correct in retention test (sum values for three independent raters); (from Marton, 1976a)

· ·			Group	ָ י			
	Exp	erimen	tal	(	Control		_
Retention	Mean	SD*	N	Mean	SD*	N	't'-test
Immediate Delayed	34.5 21.0	8.8 5.5	15 15	45.7 30.2	8.5 10.5		p < 0.01 p < 0.01

<sup>\*</sup> Standard deviation

How can this rather clear difference in performance be accounted for? The explanation, in our view, reveals a fundamental aspect of how students adapt themselves to the demands they are exposed to. What happened was that the participants invented a way of answering the interspersed questions without engaging in the kind of learning that is characteristic of a deep approach. The technique they used was simply to read the text in such a way that they were able to mention (c.f. Säljö, 1975) the contents of various parts of each section in a rather superficial way. Thus, the task is transformed into a rather trivial and mechanical kind of learning, lacking the reflective elements found to signify a deep approach. What allowed the participants to transform the learning in this way, was obviously the predictability of the task. They knew that they would have to answer questions of this particular kind, and this allowed them to go through the text in a way which would make it possible to comply with the demands (i.e. summarising the various parts of the sections, stating the main point in them, dividing them into sub-sections, etc.) without actually going into detail about what was said. As Marton (1976a) concludes, "this process can be seen as a special case of the common human experience of transformation of means into ends" (p. 47). The questions which were intended as means of helping the students to adopt a deep approach, instead became the objective towards which the learning was geared. In this transformation, the attempts to deal with them in an expedient way became detrimental to learning.

The outcome of this study raises interesting questions about the conditions for changing people's approach to learning. The "demand structure" of the learning situation again proved to be an effective means of controlling the way in which people set about the learning task. Actually, it turned out to be too effective. The result was in reality the reverse of the original intention when setting up the experiment. The very predictability of the "demand structure" in our view played the central role in generating the paradoxical outcome. Therefore, in the next study to be described, while again using the learners' expectations of the questions subsequent to the reading as the independent variable, we tried to restrict their expectations, more indirectly, to the kind of questions, instead of to exact questions.

#### Questions after reading

In the study reported by Säljö (1975; see also Marton and Säljö, 1976b) 40 university students were divided into two groups. The factor varying between the two groups was the nature of the questions that the groups were asked after reading each of several chapters from an education text-book. One set of questions was designed to require a rather precise recollection of what was said in the text. The questions focused on were, for example, enumerations and listings of causes and consequences of certain events, factual information such as names, percentages, terminology, and so on. The idea behind this was, of course, to see if the participants would adopt a surface approach to meet the demands they

could predict they would have to face after reading each successive chapter.

In the second group, the questions were directed towards the major lines of reasoning. The demand for remembering exact information of the kind mentioned above was much lower, and instead the participants had to give evidence that they had understood how the conclusions followed from the developing argument, and they also had to provide judgements as to whether the reasoning seemed consistent and correct. In addition, they also had to recall the text and give a short summary of its main points.

After reading a final chapter, both groups were exposed to both kinds of questions and they were also required to recall the text and summarize it in a few sentences. The outcome here thus served as the major dependent variable of the study. The results show that a clear majority of the participants reported that they attempted to adapt their learning to the demands implicit in the questions given after each successive chapter. This could be seen both in students' subjective reports about how they set about learning as they went from one chapter to the next, and in the way the final chapter was recalled and the questions answered.

Was it, then, possible to influence people to use a deep approach in this more indirect way? Unfortunately, the answer to this question cannot be a simple 'yes'. The crucial idea of this study, that people would respond to the demands that they were exposed to, was verified. In the group which was given "factual" questions this could be clearly seen and, as expected, both their recalls and the way that the questions were answered, as well as the reports about how they set about learning, showed that they reacted to the questioning through adopting a surface approach. However, in the other group, the reaction did not simply involve moving towards a deep approach. Some students did, others did not. A fundamental reason underlying this was differing interpretations of what was demanded of them. Only about half the group interpreted the demands in the way intended. The other students handled the task in very much the same way as was found in the study by Marton described above. By focusing their attention on the most conspicuous tasks, they were able to foresee what they would have to face after reading (recalling the text and summarizing it in a few sentences). These participants then technified their learning, again concentrating solely on perceived requirements. They could summarize, but not demonstrate understanding. This concept of technification requires some additional comments, since it reflects a rather fundamental observation that has been made in the studies where attampts have been made to influence the approach people use.

A common idea in these studies has been to observe and describe, in as great a detail as possible, what characterizes a deep and a surface approach respectively in terms of the kind of learning that people engage in. On the basis of this knowledge, it ought to be possible to influence people who do not spontaneously adopt a deep approach to behave in a way similar to those who do this in a given situation. For example, since it could be observed that it was characteristic for students using a deep

approach to clarify for themselves in an explicit way the main points and lines of reasoning in the text that they were reading, it is very common to assume that if one makes other students perform the same kinds of activities, this would mean that they too would be using a deep approach. However, it is obvious from the two studies reported of here, and from other similar investigations (see, for instance, Dahlgren, 1975), that this kind of logical reasoning does not always lead to the expected results when applied to human behaviour. It is important to realize that the indicators of a deep approach, isolated in the research, are symptoms of a rather fundamental attitude towards what it takes to learn from texts. Thus, one cannot treat these observations on what characterizes a deep approach as pointing to casual factors that can be isolated and manipulated through rather simple means to achieve the desired end. Instead, if we take the study by Säljö as an example, what happened was that some students made it an end in itself to be able to give a summary of the text after each chapter. In this way, their learning was geared towards the objective of fulfilling this particular demand, and again the task can be solved through mentioning the various parts of the text at a very superficial level. This is thus an example of the process of technification of learning resulting in poor performance. The functional mechanism underlying this process is that the perceived demands become so predictable that students believe they can handle them through a very shallow interaction with the text. They simply use their knowledge about what is going to happen later to economize on their efforts. This, as was pointed out earlier, is a very common human reaction, and we should not be surprised to find students behaving in such a way.

Taken together, these studies illustrate that although in one sense it is fairly easy to influence the approach people adopt when learning, in another sense it appears very difficult. It is obviously quite easy to induce a surface approach and enhance the tendency to take a reproductive attitude when learning from texts. However, when attempting to induce a deep approach the difficulties seem quite profound. How are we to understand this?

If we return for a moment to the nature of this distinction as it emerged in our studies, the fundamental difference between approaches has been described as one of whether students interpreted the text itself as what was to be learned, or conceived the text as the means through which they sought to grasp the meaning underlying the words and so to change their conceptions about historical developments, economic processes, or whatever. The fact that even when students have been encouraged through various means to adopt a deep approach redefine the situation in a way which will make it expedient to use a surface approach, should tell us something about the strong mechanisms operating within educational contexts in support of this reproductive mode of learning.

#### **Learning and Motivation**

One of the factors contributing to the partial failure of these attempts to induce a deep approach by manipulating the "demand structure" of the

learning situation is the relation between the learners' motives and the ways they go about learning. Learning or reading out of interest, a wish to find something out (i.e. due to intrinsic motivation), can reasonably be expected to be linked with a deep approach. On the other hand, comments from students who had adopted a surface approach showed that they had tried to memorize the text because they felt that this was required of them. Surface approach and the motive of fulfilling the demands raised by others (i.e. extrinsic motivation) seem to go together. This relation between approach to learning and motivation to learn was the topic of Fransson's (1977) study.

His premise was that intrinsic motivation is not so much something one creates but rather something one finds. If we want to utilize people's intrinsic motivation, we must focus on what they are interested in and link the study material to it. Once again, the material used was in the form of a text, but the text was chosen in such a way that it could be considered to be of immediate interest to one of the groups that participated in the experiment, but not the other. The text was about the examination system in the Education Department. The group which was assumed to be interested in the text was made up of first-year students in the department. The other group consisted of sociology students who were not taking Education. In addition, each group was randomly divided into two subgroups. One of these subgroups was subjected to treatment that was assumed would create extrinsic motivation while the other subgroup was left alone. This subgroup were told that after they had read the text they would be asked to give an oral report and that their report would be video-recorded (the equipment was prominently displayed). The source of the extrinsic motivation was thus the utilization of people's fear of "making a fool of themselves". When the text had been read, each group was, in fact, treated in the same way; they were all asked to write down what they remembered of the text.

After the sessions the students were asked to fill in questionnaires indicating how interested they were in the text, and how anxious they felt while reading it. Of course, not all the students from the Department of Education were interested in the text, nor were all the sociology students uninterested in it. Not all the subjects found the idea of being video-taped particularly threatening, but on the other hand some of those who were simply told they would have to write down what they could remember after having read the text, became very nervous. Some of the subjects who did not usually become nervous in other situations of a similar nature, did not become nervous this time either while others did. All this came to light during the interviews that were held after the experiment. The analysis showed that the main effect on approach to learning came not from the experimental situation per se, but from the reported experiences of the students — whether they felt interested, threatened, or anxious. Then the results produced a clear picture. Intrinsic motivation, absence of threat (extrinsic motivation) and absence of anxiety, both independently and together, were associated with a deep approach. Threat (extrinsic motivation), anxiety and absence of intrinsic motivation similarly correlate with a surface approach. In fact all students in the 'relaxed'

This white is a second control of

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condition who were interested and non-anxious used a deep approach, while all those who felt themselves threatened, anxious, and uninterested adopted a surface approach when they read. The conclusion that can be drawn from this experiment is that if we want to promote a deep approach, we should above all keep in mind the students' own interests at the same time as we should try to eliminate the factors that lead to a surface approach (irrelevance, threat and anxiety).

#### Approaches to Learning and Conceptions of Learning

There is, however, a paradoxical circular relation between approach to learning and motivation to learn. As the results quoted in the previous section suggest, intrinsic motivation (interest) seems to lead to a deep approach and extrinsic motivation (concern with demands) to a surface approach. On the other hand, adopting a surface approach means that the learner focuses on the "text" or tasks in themselves and not on what they are about. But it is hardly possible to be interested in a "text" unless one is paying attention to what it is about. Not being motivated by an interest in the "text" tends thus to lead to the adoption of a surface approach, and the adoption of a surface approach tends to block any interest in the "text". In order to unravel this circularity we may need to move to a superordinate level of description.

Säljö's (1975) above-mentioned study showed that the two groups participating in the experiment on the whole behaved differently because of the difference in the kind of questions they expected to follow their reading. On the other hand, there was a great variation both in the process and outcome of learning within the group which was given questions intended to induce a deep approach. In our view, this was due to the participants' different perceptions of what was required of them. The differences between contrasting experimental groups reflect the

effect of context on learning. The differences within the same treatment, however, logically must originate from a variation in something which the participants "brought with them" to the experiments. Their perceptions of the task reflect their past experiences of similar situations, and so mirror differences in their preconceived ideas of what it takes to learn.

Säljö (1979) carried out an interview study in which he asked a group of adults what learning meant to them. Analyses of the transcripts produced five qualitatively different conceptions. Learning was seen as:

- 1. ... a quantitative increase in knowledge
- 2. ... memorizing
- 3. ... the acquisition of facts, methods, etc. which can be retained and used when necessary
- 4. ... the abstraction of meaning
- 5. ... an interpretative process aimed at understanding reality.

According to the previous line of reasoning, in a learning situation, which is the "same" from an external point of view and to which the participants adopt different approaches, we would expect the observed variation in

approaches to be closely linked with a variation in conceptions of learning held by the participants on a more general level.

This was indeed one of the questions which van Rossum and Schenk (1984) set out to illuminate in a recent study. They used an open-ended questionnaire to identify the conceptions of learning held by the students. The answers showed a clear correspondence to Säljö's categories. The students also had to read a piece of argumentative prose, give an account of its content, and report about their experience of learning. The design of this part of their study was very similar to that of the Gothenburg experiment already extensively discussed in this chapter. And van Rossum and Schenk also found that students' experiential accounts of how the learning task was carried out could be classified in terms of deep and surface approaches respectively. Furthermore a close correlation between conceptions of learning and approaches to learning was found (see Table 3.3).

In addition to matching the expectation of a relationship between conceptions and approaches, Table 3.3 seems to support Säljö's (1979) remark that the main dividing line goes between the third and fourth conception. Or modifying Säljö's earlier view somewhat, we can say that the first and second conception on the one hand, and the fourth and fifth, on the other, seem to have similar relations to approaches to learning. The third conception appears to be intermediate between the others. Though the conceptions refer to what learning is seen as, on the next subordinate level within the two pairs, there are "what-how" relations between the conceptions. The quantitative increase in knowledge (the first conception of learning) is achieved reasonably by memorization (second conception). On the other hand, we improve our understanding of reality (fifth conception) by abstracting meaning from what we read, see, hear (fourth conception). The second and the fourth conceptions thus represent the "how" aspect of the two different answers to the "what" questions reflected by the first and fifth conceptions respectively. The first one of these two pairs of conceptions is closely linked to the

TABLE 3.3
Relation between conceptions of learning and approaches (from van Rossum and Schenk, 1984)

	Approach t			
Conceptions	Surface	Deep	Sub-totals	
1. Increase in knowledge	6	0	- 6	
2. Memorization	19	4	23	
3. Acquisition of utilization of facts	8	7	15	
1. Abstraction of meaning	1	11	12	
5. Understanding reality	1	12	13	
Sub-totals	35	34	69	

surface approach, not only empirically, but conceptually as well. Indeed, it appears as a generalized version of the special experience of learning, which has been termed "surface approach" (orientation towards memorization, seeing learning as a more or less passive transmission of what is on the paper into the head of the learner).

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A similar relationship seems to hold between the second pair of conceptions (the fourth and fifth) and the deep approach. Especially in the context of normal studies, the distinction between conception (aiming at a better understanding of reality be abstracting meaning from what is presented) and approach (focusing attention on what the presentation refers to) seems to become blurred. As we pointed out earlier, a deep approach, in the context of everday studying, primarily refers to the realization of the fact that the studies one is engaged in deal with some aspect of the "real world" and thus by studying, one is trying to improve one's understanding of it. This is a view more or less identical with the one expressed in the fourth and fifth conceptions of learning; its investigation represents the major thrust of current research in Gothenburg.

### Conclusion

In Chapter 2 it is argued that the outcome of this kind of learning should be described in terms of the conceptions of the phenomena learned about which have been reached through learning. As one of the most immediate implications for teaching, on the other hand, attention is drawn in Chapter 11 to the importance of knowing what conceptions students already hold about the phenomena to be introduced to them. And it is exactly in transitions between preconceived ideas of the phenomena and an improved understanding of those phenomena, where the most important form of learning in higher education is to be found. Chapters 1 and 2 both showed, however, that this conceptualization of learning differs radically from the one underlying the way in which learning has been dealt with in psychological research.

The research described in this book is an attempt to draw attention to outcomes of learning which seem to coincide with the aims of university lecturers (as seen in Chapter 1), and yet are currently underemphasized in the teaching methods most commonly adopted, and not reached by the many students who still conceptualize learning in terms of reproductive requirements. To the extent to which students and teachers share understanding of what it means to learn, we should expect improvements in the quality of learning in higher education — and indeed in education in general.

# Acknowledgements

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### Notes

1. The selection procedure resulted in a collection of comments relevant from the point of view of the phenomenon to be "delimited". Extracts were then brought together into groups on the basis of similarity and the groups were "delimited" from each other in terms of differences. In very concrete terms it meant sorting the quotes into piles, trying to extract a core meaning common to all the quotes in a certain pile, examining the borderline cases and eventually making explicit the criterial attributes defining each group, not the least in contrast to the other groups. In such a way the group of quotes were turned into categories defined in terms of core meaning, on the one hand, and borderline cases, on the other. Each category was exemplified by a selection of appropriate auotes.

An important difference between the way we proceeded and traditional content analysis was that here the categories into which the comments were sorted had not been predetermined. Our analysis was dialectical in the sense that bringing the quotes together developed the meaning of the category, while at the same time the evolving meaning determined which of the categories were included or omitted. This meant of course a lengthy and painstaking iterative procedure with continual modifications in which quotes were assembled, and consequently further changes in the precise meaning of each group of quotes. There was, however, a decreasing rate of change and eventually the whole system became stabilized. Each category was then as homogeneous as possible. The outcome was a hierarchial structure of categories, chiefly related to each other in terms of similarities and differences.

A second important difference in relation to content analysis was the level at which we examined what the students had said about their experience of learning.

2. In spite of what was said in the previous section about terminological questions, in the rest of this chapter - in order to avoid more confusion - we will use "approaches to learning", unless stated otherwise, with reference to the surface/deep dichotomy. This will also be done in the case of studies which historically belonged to the "levels of processing" period.

# Chapter Four Skill in Learning

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### Introduction

In the preceding chapter, the distinction between deep and surface approach was presented. This distinction is used throughout the book as a general framework for describing differences in learning. Within this general framework, differences between people in their ways of organizing learning materials are distinguished. It is the aim of the present chapter to pursue further the question of organization in learning and to specify in greater detail the nature of the relation between the activity of the learner and the outcome of learning. This will be done by use of the concept of skill in learning and by further describing the meaning of approaches to learning.

In the present chapter the term skill will be used to refer to the nature or quality of an interaction. The term skill is used in a way similar to that of Bartlett (1951 and 1958) and Singleton (1978). Bartlett gives the term skill a very broad meaning and makes the concept a fundamental one in describing all human activity. Singleton summarizes the meaning skill has to Bartlett and his colleagues in the following way.

Sir Frederick Bartlett and his colleagues in the Psychology Department were talking and writing about the concept of skill as the fundamental unit of behaviour. This made entire sense to me but not apparently to very many other people because the movement dwindled rapidly with the retirement of Sir Frederick in 1952. It got lost within performance studies which were essentially behaviouristic and stimulus-response in origin, a quite different style of thinking from the gestalt approach of skill psychology. (Singleton, 1978, p. xi)

Instances of reading, listening, writing and problem-solving, which are the kind of interactions dealt with in other chapters of the present book, can be considered to represent skills. Such skills are conditions for and parts of learning, and the quality of learning is dependent upon the quality of the skills deployed. The purpose of this chapter is to discuss the most important general characteristics of skill in learning.

An important change which takes place when one moves through the successive levels of the educational system from primary school to higher education concerns the learning tasks dealt with. The knowledge and the phenomena which students are required to deal with increase in scope and complexity. Thus there is an increasing requirement to deal with

complexity and to some extent a corresponding development of knowledge and skills. Differences in complexity have important implications for the meaning of skill in learning, and organization, as we shall see, is the most important element in dealing with complexity.

Organization is also the aspect of the treatment of the learning material most closely linking the qualities of knowledge and outcome of learning described in Chapter 2 and the approaches to learning described in Chapter 3. The main differences in knowledge described in Chapter 2 are of an organizational or structural character and they are related to corresponding differences in the approach to the content of the task. Here we shall discuss skill in learning by further exploring the concept of organization. The centrality of organization to skill in learning will be examined through a consideration of the learning of three different and successively more complex kinds of subject-matter: learning combinations of signs, learning facts, and learning organized wholes.

# **Learning Combinations of Signs**

The aim of this brief section on combinations of signs is not to emphasize the learning of such material but to provide a background to the description of learning of facts and organized wholes. In dealing with the question of learning, we shall first describe and discuss the skill of performing a task and then we shall comment on what might be learned from performing the task.

# Organizing and memorizing combinations of signs

The work of Ebbinghaus (1913) represents an early tradition within the psychology of learning which shed light on the understanding of remembering. Ebbinghaus' aim was to study learning in its purest sense, and he saw in the invention of meaningless units such as nonsense syllables a form of learning material which offered the prospect of purity (cf. Chapter 1, p. 5). Since there was no obvious relationship between the syllables, and since they had no evident referential meaning, they provided a learning material which was not subject to "contamination" by the existing knowledge of the learner. However, it is both difficult for an experimenter to devise learning materials devoid of meaning and for individuals to set about memorizing these meaningless materials, and this tells us something important. It is very difficult—perhaps even impossible—to remember something without any organization or meaning. To try to do so seems to be contrary to the very nature of human activity. Indeed, when individuals attempt to learn what we shall call combinations of signs, they do so through the creation of organization and meaning.

Combinations of signs, such as lists of nonsense syllables, do in fact have a very elementary organization, in that they are ordered in a sequence. However, to use only this organization leads to a poor

performance in reciting the combination. Paradoxically, skill in reproducing combinations of signs seems to depend on investing them with organization and meaning. This is perhaps best seen in descriptions of the activity of people with an exceptional capacity for memorization, as in Luria's (1969) The Mind of a Mnemonist and Hunter's (1977) An Exceptional Memory. Although people good at remembering use very different and individual approaches, they all rely both on organizing the units of the learning material systematically, and on giving specific meaning to the units. Both organization and meaning, then, are fundamental to remembering.

We can illustrate the importance of organization to remembering by analysing an experiment described by Katona (1945) in his discussion of two main processes of learning, learning by memorizing and learning by organizing. The material used in Katona's experiment was a series of figures, 581215192226. This material can be organized in different ways, representing differences in the skills of dealing with and reciting the material. One way is to try to remember it as it stands, i.e. as a series of twelve isolated items. If you try to do this yourself, it becomes obvious that it is very difficult to remember the series.

In Katona's experiment, he used a second form of organization in instructing twelve adults to group the figures in three's and reproduce them by saying 581, 215, 192 and 226. After a short period of interaction with the material, nine of the ten adults could reproduce the series. This illustrates the marked effect brought about by the simple organization of grouping compared to memorizing the figures as a series of isolated items. However, we should also note that when asked one week later if they still remembered the figures the subjects considered the question unfair as they had not been told that they would be asked to recite the figures at a later date. Miller (1956) has subsequently clearly described the importance of grouping to remembering.

Another group of subjects in Katona's experiment were merely instructed to learn the series. Some of them then discovered a regularity in the series. They found that the series could be structured in a series of numbers from lower to higher with alternating differences of 3 and 4 between numbers, as follows:

Those who discovered this principle of organization returned the material to the experimenter. They did not need to repeat the series and they were able to reproduce it without any faults. One week later they could still reproduce the series and after four weeks had elapsed three out of five still remembered the principle although only one of them could remember that the first figure was 5. (Indeed, this principle can easily be explained to a subject and will be readily remembered, even though the subject has not discovered the principle for himself.)

These three ways of treating the material, then, differ in the whole-part

relationships which are constructed. In the first case, the figures are isolated and the organization is built on sequence only. Recalling the whole depends on remembering the figures in order. In the second case, grouping is the organizing principle and this means that the whole is a series of four groups. This changes the relation between whole and parts as well as between parts by introducing a level of organization between the figures and the series as a whole. The third way of treating the material also depends upon a grouping of the figures, but the grouping is not arbitrary—it is in accordance with a distinct principle. In our definition, these three ways of treating the material represent three main types of skills.

# Learning from organizing and memorizing signs

It is apparent that the differences in organization are not only linked to differences in how easily the series of figures is learned but also to differences in what is learned through those skills. What is learned is either the arrangement of the figures merely in sequence, a grouping of the figures or an organization of the figures according to a principle. What has been learned assumes greater importance if it also includes the skill of learning this kind of material. The skill which might have been developed is the skill of grouping the material or of finding and using an organizing principle. Viewed in this way, the organizational aspect of skill in this particular case also amounts to "learning to learn".

# **Learning Facts**

Facts differ from combinations of signs in that they refer to parts of the surrounding world. Unlike, for example, nonsense syllables, facts have an inherent meaning. Indeed, referential meaning is a basic characteristic of a stated fact. As we shall see, organization is fundamental in the learning of facts, as it was in the learning of combinations of signs. In the learning of facts, however, organization is bound up with referential meaning.

# Understanding facts

In the experiment by Katona which we have already referred to, another group of experimental subjects was given the same figures in the same order, but presented in the form of a factual statement: "The Federal expenditures in the last year amounted to \$5812151922.26". (The experiment was conducted in the USA in the 1940's with adult participants.) The subjects in this group made rather more errors in recalling the exact figures compared with the earlier groups we described. However, several of them remembered the approximate sum of money a week later (about \$5,810 millions, or 5.8 billions). Where, as here, the series of figures is treated as a part of a fact, skill takes on a different meaning. The series of figures is attended to as a whole, as a sum of money, and moreover as a specific sum related to a part of reality. And in

contrast to the case of remembering signs, the figures are not given equal importance, for although they are still in the same order, there is a gradual decrease in the importance of the exact figures as we move from the beginning to the end of the series. This decrease in importance is determined, of course, by the meaning which the figures now have. Thus we see how organization and referential meaning together constitute the fact. The organizing principle is therefore not, as in the previous case, simply a mnemonic device dependent on grouping the signs or on discovering the alternating differences of 3 and 4. In the learning of facts, we have to consider organization together with referential meaning.

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Words are another kind of sign which in combination are given referential meaning. Indeed, it is through their combination with words that the figures in the above example are given their referential meaning. However, words may be treated as isolated units, as in research on "free recall", where the subjects have had to learn lists of words or names. In this research, the phenomenon of grouping has been very clearly demonstrated, for although the words in the lists are presented in a random order it is found that the subjects arrange them into groups when learning the lists. The grouping is made on the basis of the meaning of the words. This kind of subjective organization has been well demonstrated by, for instance, Tulving (1962, 1968) and Marton (1970).

Here, we are mainly concerned with series of related words expressing a fact, as in our example of Federal expenditure above. The example concerned a rather isolated fact. We now turn to another example where the fact is presented together with other facts in a reading text. In other words, the facts are located within a text, and have been organized in a way which reflects the subject-matter of that text. The text is an article by Dahllöf (1968) entitled "New facts about the open faculties". This article was used in an investigation by Svensson (1976), and parts of the data from the same investigation were analysed by Marton (1975b) and have already been referred to in Chapters 2 and 3. The content of the article is summarized on p. 25.

In the article, Dahllöf presented statistical tables showing that pass rates differed between different groups of students (e.g. male/female, younger/older students, arts/science students) and that they differed between the traditional and newer universities. He then presented cross-tabulations showing that the more significant differences in pass rates were found amongst particular groups of students and between different kinds of universities—for example, the pass rate was high amongst younger men studying liberal arts at the traditional universities of Uppsala and Lund, but it was low amongst younger male arts students at the newer universities.

If we now compare the problems posed by dealing with the facts about pass rates presented in this article with that given in the Federal expenditure example, we can see that there are very considerable differences. One important difference concerns the degree of specificity with which the facts are remembered. In the Federal expenditure example, the only fact to be remembered is the sum involved, and there

may be some differences in the specificity with which this is recalled (e.g. as 5.8 billion or as 5.812 billion dollars). In the case of the article. however, there is at one level the exact pass rates and at another, the fact that there are differences in pass rates in a particular direction. Indeed. the direction of the difference is easier to remember than the precise pass rates or the exact difference. The reason for this stems from the relation between this fact of the direction of difference, on the one hand, and on the other, the rest of the message of the text and the previous knowledge of the learner. It is difficult to find other facts that support the remembering of an exact pass rate. It is much easier to find support in other facts for the direction of the difference.

The supporting facts presented in the text concern a general reference to differences between the universities in terms of the environment in which students study. Two specific differences are mentioned: that there are more job opportunities in the big cities and that group solidarity might be more highly developed at the older universities. A weaker sense of solidarity would mean that students in the large cities do not study quite as hard, while the wealth of job opportunities in the cities might divert them from studying. These supporting facts therefore make it understandable that the pass rate is lower in the big cities. They mirror the direction of differences in the pass rate, and they suggest that perhaps these differences can be seen in terms of a cause-effect relationship. In this case, then, organization and reference aid remembering of the direction of difference.

What may also help in remembering the difference is its relation to the overall organization of the content of the text. The overall organization is that of 'facts-conclusion' and the differences in pass rates have a direct relation to the conclusion, which is that if any measures are to be taken, they should be selective ones. The basis for this conclusion is the differences between groups of students, some of whom had a satisfying pass rate while others perhaps did not. Here, again, we can note that it is not necessary to remember any specific differences at all (nor even the correct direction of the difference) when recalling the point being made. The organizing principle here—the structure of the text in the form 'facts-conclusion'—is the chief organizing principle of the text. If understood, it very strongly supports the recognition that there are differences between groups of students. There was a clear difference in the use of this organizing principle between students, and this difference also represented the main variation in understanding the text as a whole; we shall therefore turn to this in the section about learning organized wholes.

# Learning from understanding facts

Whether a performance is to be considered skilled or unskilled varies in accordance with the criteria specified. This can be illustrated in relation to the example of Federal expenditure. Let us assume that students are asked a question about the size of the Federal expenditure, and one gives

the answer "5.8 billions" while another answers "approximately 6 billions". If the criterion of performance is precise recall of the text, then "5.8 billions" represents a better performance. If, however, the criterion of performance is one in which the fact about Federal expenditure is to be understood as having meaning in the surrounding world, then the definition of skilled performance changes. Here, let us assume that the student answering "5.8 billions" has simply committed the fact to memory without grasping its meaning; and that the student answering "approximately 6 billions" has recognized its referential meaning. With the grasp of the referential meaning as criterion, the more precise answer represents unskilled performance, and the less precise one skilled performance. What has actually been learned through reading the text cannot easily be determined. The referential meaning that facts have is not necessarily fully acknowledged by students in their learning of these facts. The facts may be treated merely as units of information in a learning task. This, of course, means that there is a crucial difference in what might be learned: it might be something about the surrounding world or something about the text.

The description of learning also has to be based on some knowledge about what the students' conception of Federal expenditure was prior to reading the text. Turning to the second example we gave, on differences in pass rates at Swedish universities, we can examine the role of previous knowledge as a basis for understanding and learning facts. In this example, it is reasonable to assume that the students already know what percentages and differences in percentage are, and that they know the meaning of the groupings of the students. Lack of knowledge in any one respect may cause problems in understanding the fact of the difference. Another problem may be that some students have not previously encountered cross-tabulations, and so fail to grasp their meaning. Although a student might not understand the meaning of the crosstabulations because of a lack of prior experience of them, the student could have overcome this deficiency with the aid of the discussion which accompanied the tabulations. In other words, by grasping the organizing principle and the referential meaning according to which the fact of the difference was to be understood, the student would be able to make up for a lack of knowledge of cross-tabulations. Indeed, the most interesting aspect of skill in learning is that students are able to overcome deficiencies in previous knowledge. To learn to use previous knowledge, to organize and to extend meaning are important aspects of skill in understanding and learning. To develop these qualities is to learn to learn.

# **Learning Organized Wholes**

In the preceding section of the discussion, our concern was with the understanding of a fact or facts. In the last example we gave, the differences in pass rates (which constituted the facts we focused upon) appeared within the framework of a more complex unit of meaning—i.e.

an article which was structured according to the principle 'arguments-conclusion'. Indeed, we saw that the learning, remembering and understanding of this fact was related to the organizational and referential setting in which the fact was embedded.

In more complex learning, however, the aim underlying a learning task involving material such as an academic text is not the learning of facts, but rather the learning of an organized whole in which certain facts are embedded. This represents a very significant shift. The aim has become the learning of the organized whole, through a grasp of the interrelation between the parts which make up that whole. Within this organizational and referential framework, a specific fact is often of no consequence. It often does not matter whether the fact itself has been remembered or not, and it may not even matter if the fact has not been understood. In this section, we shall be concerned with the learning of organized wholes, defined as unities of distinctive parts which are interrelated.

# Understanding organized wholes

We shall continue with the earlier example of a text about university pass rates to give a description of qualitative differences in the understanding of the text as a whole. As we saw in Chapter 2 (p. 26), the different understandings which students had of the overall meaning of this text could be seen in terms of four qualitatively different categories of outcome. The four categories were the following:

- A. Selective measures. If one wants to increase the pass rate, one should take selective measures, i.e. measures for some groups of students and not for others.
- B. Differential measures. If one wants to increase the pass rate, one should take different measures for different groups.
- C. Measures. One should take measures.
- D. Differences. There are differences in examination pass rates between groups of students.

The four categories represent different treatments of the message of the article. In category D, "Differences", the students have focused on some of the facts but have merely grouped them together without organizing them into a whole. This is also true of the students holding outcome C, "Measures". They consider a concern for measures as just another unit of meaning. It does not have the character of a conclusion related to certain arguments and, in fact, it is in contradiction to what was argued in the text, since the author's concern was to question whether any measures were needed at all.

Categories 'A' and 'B' represent organized wholes with a facts-conclusion structure. The specific structure, however, is not the same in each case. Outcome 'B' has the quite common structure that there are differences between groups of students and that the groups therefore have to be treated differently. Outcome 'A' has a more complex structure and is equivalent to the author's message. The differences between

groups of students mean that in some groups the pass rate is in line with expectations, while for others it is not. Therefore, if any measures are needed, these measures should be directed only towards those groups where pass rates are below expectations. In other words, it is stressed that nothing need be done about certain groups of students, so the measures to be taken should be selective.

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The four categories of outcome are thus based on four qualitatively different ways of organizing the content of the text when reading and remembering it, i.e. they represent four different skills which each lead to different understandings. At the same time there is a more fundamental difference between the skills embodied in categories A and B and those embodied in C and D. It is the difference between organizing the content into an organized whole or merely ordering and grouping parts. In one of the original Gothenburg investigations (Svensson 1976 and 1977), the first way of interacting with the text and organizing the content was called a holistic approach to and understanding of the text and the second way was called an atomistic approach and understanding.

Within that investigation, the difference between a holistic and an atomistic approach was found to be the most crucial difference between interactions with complex learning materials. The difference is one between merely delimiting and ordering parts of the material interacted with, compared to integrating parts by the use of some organizing principle. As our earlier discussion implies, there are usually important differences too within these main categories of approach and organization. Within the atomistic approach, the parts may be differently delimited, internally integrated and ordered. Such differences will also exist within the holistic approach, but here the main difference will concern the principles adopted in organizing the parts into a whole.

Several general principles of organization such as narratives, argumentconclusion, principle-example and cause-effect are often commonly recognized as essential to a given material. It is, in most cases, not common for a learner to use a different principle of organization from that suggested by the material; for instance, the form argumentconclusion instead of principle-example or narrative instead of causeeffect. The level of agreement amongst individuals about the organizing principle of course also reflects the experienced clearness or ambiguity of the material. The relatively high degree of agreement which usually exists creates a situation where the main difference becomes one between those recognizing and using the principle of organization and those not doing so, i.e. between a holistic and an atomistic approach.

Although the fundamental difference between holistic and atomistic understanding in many cases is the main difference among a group of persons, this may not always be the case. Different learning materials lend themselves more or less readily to the identification and use of a main principle of organization. In some cases, everyone in a given group may very well use an atomistic approach while in other cases all will use a holistic approach. This does not exclude the fact that individuals display some degree of consistency in their approach to similar kinds of material,

a degree of consistency, however, that varies between individuals. To illustrate the fact that a difference other than that between a holistic and atomistic approach may be the most important one in a specific case we shall give an example.

Unlike the earlier examples, this example does not focus on interaction with a text or message but on relating to and thinking about a physical phenomenon. The example is taken from a recent investigation of university engineering students' understanding of physical phenomena (Johansson, 1981; Svensson, 1984). The students were asked to describe and explain a number of different physical events. The present example, which has also been discussed in Chapter 2, concerned what happens when a car is driven in a straight line on a motorway at a high constant speed. The first question put was "What forces act on the car?", and there were further questions concerning the different forces, their interrelation and effects.

The most general and fundamental principle used to organize the whole phenomenon was that of cause and effect. An atomistic approach, then, would have meant not using this principle, but giving the "causes" and "effects" as unrelated parts. However, the relevance of a cause-effect relation as the superordinate one is apparent to all of the students in this instance. The difference that does emerge concerns how cause and effect are delimited and related, i.e. it is a difference within the category of holistic approach. It broadly corresponds to the difference between the two holistic categories of "Selective measures" and "Differential measures" in our earlier example. Those two categories represented two different ways of relating arguments and conclusions about university pass rates. As far as the organization of the present example is concerned, the force or causal aspect is related either to velocity in the sense of motion or to change in velocity, i.e. to acceleration. This difference in the delimitation of the effect (and in the relation between cause and effect) is the most fundamental difference which can be observed in the students' organization of the phenomenon.

The first mode of organization, based on motion as effect, represents an Aristotelian conception and the second, based on acceleration as effect, represents a Newtonian conception of motion. The difference is one of the most important ones in the history of the science of physics. The Newtonian conception, although it is more complex, is not more holistic. The complexity involves greater and better distinctions within the description of the whole. Thus, the Newtonian conception not only involves more complexity in terms of differentiation of more aspects or parts (like constant velocity in addition to acceleration as a special case of motion) but also better fidelity to the material organized. (A similar observation can be made concerning the difference between the two corresponding categories in our earlier example about university pass rates.) This combined difference in complexity and fidelity we might call completeness. Thus we have emphasized two main differences in the skill of understanding; the difference between a holistic and an atomistic approach and distinct differences in completeness within a holistic approach. While this in no way exhausts the variation in important qualitative differences, these two differences can be considered to be the most important ones.

The quality of the interaction, the skill, is dependent both on the person acting and the material being acted upon; it is a relational phenomenon. Moreover, holistic and atomistic approaches are not seen as characteristics of individuals, but as individuals' way of relating to specific materials. It was for this reason that the concept of approach was introduced by Svensson (1976). The concept emphasizes the possibilities of openness to and dependence on a given learning material as well as on the past experience of the individual. It was used in preference to the concept of process which emphasizes certain given forms or mechanisms by means of which material is processed. It was also used in contrast to the concept of strategy which sometimes seems to emphasize the dependence of interactions on predefined plans — something which is not prejudged but left open when using the concept of approach. This accords with a more general emphasis on the fundamentally creative nature of human activity.

# Learning through understanding

The atomistic approach represents a type of skill which is restricted in terms of the learning which it makes possible. This skill means, at best, learning of parts if these are new to the learner. This is a severe restriction since the understanding of the main point or the significant meaning of a message or the fundamental nature of a phenomenon is dependent on holistic organization. A shift from an atomistic to a holistic approach thus constitutes the most significant of any improvements in understanding and learning. To learn to organize the content into a whole is the main problem of learning to learn. However, we must also consider the fact that there is a great variation within both the atomistic and the holistic approaches.

Within the atomistic approach to complex material, there is a variation in how atomistic the approach is. This variation corresponds to the degree of organization of parts. The most atomistic approach means a memorization of very specific details. A less atomistic approach means the integration of details into bigger parts and into main parts. There is also a variation in *completeness*, i.e. in the complexity and fidelity of the treatment of parts, which has its counterpart, as we have already seen, in the holistic approach. Such variations, of course, make a considerable difference to the understanding of the message or the phenomenon and to what might be learned by means of this understanding.

Such variations within the atomistic approach also mean, in effect, that some learners are holistic in relation to parts of the material while others are atomistic in relation to these same parts. This is important not only to the understanding of these parts but also to learning to learn. The less atomistic the approach is (the more holistic in relation to parts it is), the easier is the shift to a thoroughgoing holistic approach. An important

aspect of learning to learn takes place within the atomistic approach when there is understanding and learning of progressively larger parts and an increasing completeness in the understanding of parts. But the biggest stumbling-block occurs when the progression halts and learning becomes fixated to memorizing parts of a certain complexity. Learning to learn then becomes equivalent to learning to memorize as opposed to learning to organize.

Within the holistic approach, there are also variations in understanding and learning. We have already discussed differences in completeness. As far as learning to learn is concerned, an improvement in completeness means improved analytical and interpretative skills, which are skills in learning. This is a part of learning to learn within the atomistic approach too, but only in relation to parts of the material. And since learning materials vary in complexity, to be atomistic in relation to a very complex material may involve more organization, analysis and interpretation, than to be holistic in relation to a rather simple material. This is because the precise meanings of a holistic and an atomistic approach are not fixed but are instead a function of the learning material concerned. The distinction between the two approaches centres upon the *main* difference in approach to a given learning material. And just as the nature of the learning material may vary, so the meaning of the main difference in approach may vary too.

There is the further problem of the difference between understanding or performance and learning. Learning is equivalent to what is new to understanding. What has been learned may be many very different things, ranging from previously unknown specific facts to an entirely fresh conception of a very complex subject matter or phenomenon. What is new in the latter case cannot be ascertained solely on the basis of what has been understood in a particular instance, but is dependent on the previous understanding of the subject matter or the phenomenon, i.e. to describe learning fully we have to describe qualitative changes within a developmental perspective.

What may also have been learned, in addition to a new understanding, is the skill of learning, i.e. of how to deal with learning materials. Skill in learning is dependent upon sensitivity to the material and the exploration both of the content of the material and of the relevance of organizational principles to the content. In any particular learning situation, there may be a complex interplay between two groups of elements. On the one hand there is the content of the task and its organization. On the other hand, there is the student's previous knowledge and his or her approach to the task, where the approach encompasses a particular intention, a way of thinking about the treatment of the task, and an attempt to organize the material.

To be skilled in learning, then, means to be deep, holistic and complete in approach and understanding. As we have already suggested, the most important aspect of this is the open exploration and use of the possibilities inherent in the material, allied to a consideration of relevant previous knowledge. It is this kind of exploration of relevant knowledge and of relevant principles of organization that represents skill in learning in the deepest sense, and it also represents learning to learn in its deepest sense.

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# Skill in Studying

In this closing section of the chapter, we shall be concerned with the relationship between skill in learning and skill in studying. This relationship is an important one which is often overlooked. The term "study skills" is a common expression which has generally been used to refer to techniques of studying such as notetaking, underlining, summarizing and so on. Interesting though these techniques are, they represent relatively superficial and peripheral aspects of the activity of studying. To see these techniques as skills in themselves is misleading, for this has the effect of isolating them from the student's thinking about the content of the study task of which they form a part. Thus, for example, underlining should be seen as a part of reading a text and notetaking as a part of listening to and making use of a lecture presentation.

On similar grounds, even the skills of reading, listening, writing and problem-solving do not in themselves constitute skill in studying, for they cannot be considered in isolation from the main units of the activity of studying as it takes place in educational settings. In an educational setting, such skills are practised within the framework of a course structure which is also linked to an examination system. And it is these assessed courses which comprise the main units of study activity (Svensson, 1976, 1977, 1981). In its widest sense, then, skill in studying describes the quality of students' performance on a study task which is embedded within a course. Consequently, our focus continues to be that of skill in performing a task, but we are now considering a more extensive task which encompasses, in varying combinations, the kinds of tasks we examined earlier.

What the task and the skill mean depends on the amount of material assigned and read, the time allocated for its study, and the form, conditions and result of the examination. Skill in studying involves the display of understanding of a given material through special skills of performance in examinations. However, examinations are normally very restricted in their form, content and duration. This means that very little of what has been understood by the student can be demonstrated in the examination, and selection is therefore necessary. This creates several problems, especially in higher education where the volume of material which students are expected to study is substantial. Since study success rather than understanding is what matters, and since this is defined as success in examinations, it seems unnecessary to understand more than what is demanded in the examinations. It is thus in the interests of students to be selective and to focus their studying in accordance with the examination. In practice, examination performance may very much depend on students' memory of the material, even in cases where tutors are aware of the shortcomings of examinations and would like performance to be dependent on a broader and deeper understanding.

In being selective, students can, broadly speaking, opt for one of two possibilities. One is to tackle the problem by selecting specific parts of the course material which they consider important and which, by themselves, are not dauntingly large. The students therefore see the examination as requiring them to remember and understand accurately and in detail these "correct" parts of the material. The other possibility is not to select from the material, but to select within it. The students place much more emphasis on overall structures and meanings than on specific details. They see the examination as requiring them to remember and understand details only insofar as these details exemplify or corroborate broader structures and meanings. The first of these possibilities constitutes a surface or atomistic approach and the second a deep or holistic approach.

The problem for the students is that the adoption of a deep or holistic approach is not explicitly required of them. What approach the students adopt is therefore likely to depend upon their previous knowledge and experience. If they are accustomed to taking a deep or holistic approach, they are likely to be able to cope with much larger units of course material. If they are not used to treating course material in this way, their experience of larger units of course material may become steadily less rewarding to them personally and less rewarding in terms of their examination performance.

The reason for this may have less to do with the content of the examinations as such than with the demands of large units of course material. As we noted earlier, it is easier to remember something that is part of a larger organized whole. It is also more efficient and more pleasurable to aim at and achieve deep and holistic understanding. The cumulative nature and increased complexity of course content presents considerable problems, however, if the approach adopted is a surface or atomistic one. Instead of the pleasure of understanding, there is the hard work of memorizing increasingly more complex and steadily larger units of material. If students adopting such an approach are fortunate as well as industrious, they will manage to pass their examinations by dint of extensive memorization while also gradually modifying their approach and learning what is required for understanding. But what often happens is that the students cope initially, when the amount of material to be digested is relatively small, but find that as the volume of material increases, studying becomes increasingly more arduous, tedious and likely to result in failure (Svensson, 1976, 1977).

Academic success may be most easily achieved by students whose previous knowledge and experience has already equipped them to cope with the learning of complex organized wholes. These students will select within the material as described above. However, to those students who select from the material there is very little feedback telling them that this approach will be detrimental in the long run. The understanding displayed and accepted in examination performance to a considerable extent represents short-term memorization. Relatively soon after the examinations are over, most of it will have been forgotten. In the long-term, the retention of understanding will depend upon the

integration between what has been learned and previous knowledge and experience — that is, on the degree to which the students' conceptions of the world around them have been transformed by what they have understood. However, integration is not an inevitable part of skill in studying. Rather it represents a problem.

The student has to balance two competing requirements: the need to deal with a large body of material in a short time, and what is required in the painstaking construction of integrated wholes. Achieving the latter demands insight, confidence and even independence and stubbornness on the part of the student. This is extremely unlikely to be found among students relying on an atomistic approach and already pressed by the increasing risk of failure. On the other hand, its achievement may in some extreme cases lead to failure if, in allocating study time, the student places integrated understanding above the requirements to learn a specified range of materials, as demanded by the examination system. Here, the paradox is that although in most cases academic failure results from problems with understanding, in some cases it may result from a devotion to thorough understanding.

To reiterate our main concluding point, skill in studying is not equivalent to skill in learning. Moreover, the benefits of skilled learning go beyond a better knowledge of a specific body of subject-matter and its long-term retention and application to new material. Ultimately, improvements in skill in learning which stem from any particular course unit are not specific to the content of that unit. They are improvements in the skill of understanding and of learning to learn. The student becomes more skilled at extending his or her understanding through an exploration of new and more complex material. Defined in this way, learning requires a relative absence of stress and a confidence in one's own thinking that are not always fostered in educational systems.

### Note

1. Our own use of this example is rather different from Katona's.

# CHAPTER FIVE Learning from Reading

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### Introduction

The written word is a powerful strategy for communicating. As Olsen (1977) has observed, the introduction of writing systems has had important consequences historically, both for cultural practices in Western society and for the cognitive processes of individuals. In its capacity to store segments of the collective experiences of a people or a culture, the written word puts a premium on a different set of cognitive activities than does the spoken word. "The documented statement", Havelock has argued, "persisting through time unchanged, [releases] the human brain from certain formidable burdens of memorization while releasing the energies available for conceptual thought" (Havelock, 1963, p. 60). Thus as a cultural and technological device the written word has had significant consequences for the development of scientific, abstract thinking, for the mode in which the knowledge which has been accumulated is passed on from one generation to another, and, consequently, for the development of society at large.

A basic notion underlying the research reported in this book is that our capacity to understand and master learning phenomena is intimately linked to our ability to talk about this only vaguely defined concept in a precise way. A vital ingredient in our research activities has been to consider "the actor's definition of the situation" (Dale, 1973, p. 179) as worthy of scientific inquiry and to recognize that human action does not take place in a social vacuum, nor is there one universally best or most basic way of construing reality — of "world-making", as Goodman (1978) puts it. This excursion into the fascinating topic of how people make sense of what they read is therefore to be conceived not merely as an inquiry into human capacity for learning in a narrow sense, but also into fundamental processes of knowledge-generation and mediation in a complex and dynamic cultural and scientific milieu where a multitude of — sometimes competing — conceptions of reality (Marton, 1981) can be found.

# Reading and Learning

The vital role played by the written word in our society is a strong reminder of the fact that the ability to read cannot be adequately considered as a mere technical skill denoting the ability to decipher

strings of letters on a page (cf. Edfeldt, 1981; Gibson and Levin, 1975 for an analysis of the nature of the reading process). A core feature of much of the reading that is carried out in academic contexts is that individuals are required to see something in the outside world — be it the structure of physical objects, an historical development resulting in major social changes, or evolution — in a perspective which is not a familiar part of everyday thinking. Consequently in the kind of reading that we do as students in order to learn, our present understanding of the world around us is often challenged, and this, we suggest, causes problems that have considerable pedagogical significance.

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From the technical point of view, the Gutenbergian invention of book printing was a rather limited step; from the cultural and social point of view it must be understood as representing an immense leap forward. making it possible for a writer or scientist to share ideas and findings with a large number of anonymous communication partners with whom he or she had never had—nor perhaps ever would have—any personal contact. Viewed in this perspective the written document, so much a part of university and college life today, is really a quite specific form of communication placing a particular set of demands on the reader in terms of the attitudes and intentions with which it is approached.

As a preliminary to studying the phenomenon of learning through reading, it is necessary to recognize that the kind of reading undertaken in universities and many other educational contexts is in certain important respects different from the kind of reading (of a novel, for example, or a daily newspaper) which typifies other contexts. A very obvious difference is that in the latter case we select what and when to read, while in the educational context freedom of choice is constrained. Students normally have to read the literature specified in course requirements, and they generally do so at a time and in an order specified in the curriculum. This means that while reading in the everyday context of the novel or newspaper reflects a choice to engage in that particular kind of activity at that particular point in time, the reading that we do to fulfil the demands of the educational system is often carried out with a different set of initial commitments on the part of the reader.

Expressed differently, what varies between contexts in which reading is done are the premisses for communication (Rommetveit, 1974) that guide our way of making sense of what we read. When trying to understand how students approach the task of learning through reading, it must not be assumed that reading done in different contexts constitutes one and the same cognitive activity; that it can be reduced to a single, basic model of information processing characteristics of individuals irrespective of their intentions and the situations which they encounter. At the very least great caution must be exercised in making this an initial assumption if the concern of the research lies in revealing what the act of learning through reading is like to the individual reader. Indeed, as will be shown in this and subsequent chapters, there are good grounds for striving towards "thick descriptions" (Geertz, 1973) of learning, i.e. descriptions which reveal the meaning of human thinking and acting "when these are no

longer defined in isolation, but rather . . . infused with the demands and traditions of the socially and culturally defined networks in which they exist" (Säljö, 1982, p. 47).

In one sense it might appear unnecessarily thorough to delve into problems of reading in a book which has the explicit aim of dealing with teaching and learning at university. Surely we can assume that students at this advanced level of the educational system can read in a sufficiently skilled way as to be able to cope with their textbooks? However, we do not merely expect students to read, we also expect them to gain something from their reading, i.e. we expect them to increase their knowledge of the world and their competence in understanding and handling various aspects of reality. This demand for learning through reading can be seen as adding yet another layer of difficulty to the process of reading, and it imposes criteria and restrictions which are different from those that apply to other kinds of reading that we do. The pedagogical context often - although by no means always - contains rather severe restrictions on the kind of interpretation of a particular piece of writing that is relevant or 'correct' in that particular situation of teaching and learning. In 'private' reading the demands for a 'common' interpretation of a text may be less meaningful, although it is quite easy to find instances where only one interpretation might be relevant, e.g. in the case of a brochure containing directions for mending or assembling an object.

In summary, then, when reading to learn students are expected to develop cognitive activities which enable them to accomplish something more complex than is generally assumed. Reading, as considered here, is a strategy for taking part in ways of conceptualizing the world that are frequently abstract and unrelated to everyday experiences in any obvious way. This poses a central problem for contemporary education. Many of the insights and statements encountered in text-books, even those encapsulated in a brief passage or two, may be the product of centuries of discussion and reflection. This should alert us to the enormous intellectual investment which underpins our present conceptualizations of the world. In investigating how students learn from reading, we are thus not merely studying the mastery of a particular technique of communication. Our inquiries concern how insights and alternative 'versions of the world' are reproduced and mediated to large groups of students under the particular premisses for communication characteristic of educational institutions.

# **Outline of the Empirical Study**

The empirical study from which the findings to be reported here derive (see Säljö, 1982), was designed to continue the inquiries into the processes and outcomes of learning described in previous chapters. Again the work can be characterized as taking place in what Reichenbach (1938) refers to as a 'context of discovery', the object of inquiry being a more detailed understanding of how students make sense of what they read.

The study comprised five main parts:

- (i) An initial interview concerning the participants' usual methods and habits of study, their conceptions of phenomena such as learning, knowledge, etc.
- (ii) The reading of a text which served as learning material.
- (iii) An interview session during which the participants were asked to:
  - (a) summarize the main point of the text;
  - (b) give a free recall of the text;
  - (c) answer a number of questions on how they set about reading and learning in this particular situation;
  - (d) answer a set of questions on the content of the text.
- (iv) A discussion of the experience of learning in this controlled situation as compared to real life.
- (v) Finally, the participants took two standardized tests, a vocabulary test and Raven's Progressive Matrices.

Each session was run individually with each participant. All communication during phases (i), (iii) and (iv) was tape-recorded. The tapes were later transcribed and the transcripts then served as the data-base for the analysis. No time-limits were imposed during any of the various phases, with the exception of the vocabulary test.

In total 90 participants took part in the study. They were recruited by telephone, and the names of prospective candidates were taken at random from the registers of various educational institutions. The 90 participants represented a much wider variation in terms of age and level of formal education than in earlier Gothenburg studies. Their level of formal education fell into one of three broad groups: short (6–9 years), intermediate (12 years), and high (at least 14 years of education, i.e. this group had at least two years of successful studies at the university behind them). The youngest participant was 15 and the oldest 73 years of age.

Broadly speaking, the rationale underlying the selection of participants was to match 'conventional' students at the three levels of formal education to adult students with comparable educational experiences. Thus, the three groups of adult students were not only older than their 'conventional' counterparts but had also had extensive experience of work outside school. Common to all participants was that, at the time when the study was carried out, they were taking part in some kind of education or were just about to start doing so.

In view of the complexity of the empirical material and of our specific concern with understanding how people make sense of what they read, the present discussion will make use of six participants as exemplars, demonstrating the major patterns which emerged from the analysis. The function of the exemplars is thus to provide concrete illustrations of ways of 'reading' the text which were characteristic of the entire group of participants, and which can be seen as indicative of significant differences in approach and outcome. The criteria which are valid in judging the merits of this task of discovery differ from those that apply to the (equally important) task of verifying the existence of the patterns and relationships described (cf. Glaser and Strauss, 1967).

The six exemplars were also chosen so as to represent the variation in age and level of formal education characteristic of the entire group of participants, as can be seen from the following summary:

- Suzy was 43 years old and just about to start her studies at a college of adult education after having been a housewife for the past 12 years. The subjects she had chosen were Swedish, English, History and Civics. Her previous educational experience consisted of 8 years of first-level education, which she had finished at the age of 15, and occasional evening courses run by a voluntary educational association.
- Sean, aged 16, had just finished basic comprehensive school and had begun his studies at upper-secondary school.
- Stan, 47 and a primary school teacher, was a university student at the time of the study. He had almost completed his degree in Swedish (Literature and English), and he held a diploma of the Institute of Printing.
- Dick, 16 years of age, had recently finished basic comprehensive school and had started his studies at upper-secondary school.
- Dora was just about to commence her first term at university at the age of 38. She had trained initially as a laboratory assistant, but for more than 10 years she had been a housewife.
- Dave, a university student, aged 23, was just about to qualify for the award of his first degree. His studies included Russian, Economics and Political Science. Since the age of seven, Dave had spent only one year outside the educational system, working in a bank.

The text which the participants were asked to read is 3,750 words in length, and is divided into three sections, without sub-headings. The first section (850 words) deals with the phenomenon of classical conditioning and starts with an example of how, as a result of being tortured, a prisoner has been conditioned to respond with convulsions at the mere sight of the pair of electrodes which have been used to torture him. Following this, the basic principles and terminology of classical conditioning, which the example illustrates, are described. The second part of the text (550 words) contains a corresponding presentation of instrumental conditioning. Besides briefly introducing the basic principles (the idea of reinforcement as a means of controlling behaviour, punishment, shaping), the name of Skinner is mentioned and his Skinner-box is explained.

The rest of the text deals with learning through language and mainly contains a presentation of some findings from our own previous research. First an attempt is made to introduce the idea of qualitative differences in approach to learning in terms of the distinction between a deep and a surface approach. This is followed by a presentation of qualitative differences in the outcome of learning which are related to these differences in approach. This is done by means of an example illustrating how different people recalled a passage in a text, some focusing on conclusions while others focused on reproducing the text as such or on the

superficial mention of various parts of it (as has been described in Chapters 2 and 3).

The text thus had a clear pedagogical intention and the general mode of presenting results and knowledge from scientific studies corresponds to what can be found in many other texts having similar aims (the text is a chapter from a book of readings in psychology used at upper-secondary school). Several examples are used to illustrate and back up the general statements made and principles presented.

## **Findings**

As a preliminary to discussing the kind of text which has been used here as an object of learning, it is essential to make a distinction between the information it contains and the messages it is intended to convey. Thus, in addition to presenting information such as names, technical terms, descriptions of famous experiments, etc, the text is obviously written, to use Rommetveit's (1974) phrase, "to make something known" about learning. What it intends to make known about learning can be described at different levels of generality. For instance, at the most general level the text has been written so as to provide some kind of map in terms of which learning processes and events can be understood. However, within the text there are also many statements which have an obvious message character, i.e. they make something known about learning without necessarily providing any new information of a more specific kind. The fundamental nature of this distinction between messages and information when considering this text as a means of communication will become evident below.

Since the text introduces the field of learning as an area of scientific inquiry, it also aims to introduce basic technical terms such as conditioning and stimulus, and to show the reader how different everyday behaviours and processes can be interpreted. As an aid to understanding, the author employs various techniques such as simplification and analogy to adapt the content as well as the linguistic form to the assumed interests and preconceived notions of his readers. The text opens with a rather dramatic scene from a Greek prison where a man is being tortured with electrodes. After having been exposed to this torture for some time, the prisoner has only to see the electrodes and he responds with convulsions. Following this example, it is pointed out that what the prisoner has been going through can be described as an instance of learning, and an explanation is then given of how the illustration can be explained within the framework of learning. The following excerpt is the very beginning of the text:

"On the same day they applied the electrodes in a new way. Instead of placing them in the usual way, behind my ears, they rubbed them over my whole body—my arms, legs, everywhere. It felt like having a drill-bit in me, drilling in until you feel like you're going to fall apart. It was like being in the middle of a whirlwind, you feel like a piece of

straw in a threshing machine. One of the leather straps broke and so they quit. I was very afraid. One of them listened to my heart. He said something to me, but I couldn't understand. Then they put me on a stretcher. I couldn't collect myself. I couldn't think about anything. Lethargy.

I don't remember if it was Karagounákis who came in afterwards, I only remember the stretcher and the leather bench, of course. New preparations. This time I had the feeling that everything was electrified. I got a shock as soon as I saw the electrodes, even before they had touched me with them. The man who held me was surprised. He only moved it in front of my eyes and I felt the current the whole time. He moved the electrode behind my head, where I couldn't see it; then I felt no electric current. Then he touched the back of my head slightly with the electrode and I jerked. The others came nearer to watch. They tried with the electrode from different angles. It made no difference where they put it, as soon as it came into my field of vision I felt the current. That day they didn't ask any more questions. They laid me on the stretcher and took me back to my room . . .

This example from a very unsettling event in one of the Greek military junta's torture chambers at the close of the 60's describes one form of learning in a dramatic way. Normally we don't feel shocks just from seeing electrodes or electric plugs of various kinds. However, the tortured prisoner in the example above had been exposed to experiences which caused him to react in a way quite unlike what he would have done had he never been tortured with electric current. We can say that this new reaction was learned.

This form of learning is called CLASSICAL CONDITIONING.

Contact with the charged electrode (unconditioned stimulus)..."

In looking at how the participants dealt with this particular passage, several interesting, and unexpected, observations can be made. Starting with excerpts from the recalls, we can see how Dick, Dora and Dave retold this passage.

### Dick:

Yes, It starts with a story about conditioning, classical conditioning. They had taken an example there about a man who was being tortured with electrodes and things in a Greek torture-chamber. On several occasions he had been given electric shocks and sort of become afraid of them. After that it was enough for him to see them to feel the electricity pass through his body. He didn't have to get any electricity, it was enough just to see them. But if they took them away so that he didn't see them, then he didn't feel any electricity. That was classical conditioning.

#### Dora:

First he described what's called classical conditioning. There was a man who had been tortured with electrical . . . equipment, and it

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got the effect that he just had to see these electrodes and then he'd feel the pain . . . . And this was what they called classical conditioning.

### Dave:

A Greek was being tortured by the Greek junta and this was used as an example of classical conditioning, that is of conditioned responses. The person who was being tortured also got to see the electrodes, which gave the electrical shocks and gradually he sort of felt the electricity in his body just by seeing the electrodes. This I suppose is an example of classical conditioning which was investigated and discovered by Pavlov...

The point here is that it is evident that in these recalls this passage is reconstructed in very much the same way as it was used by the author. i.e. what is brought into focus by the writer through the torture scene is jointly attended to by the reader. Consider now other ways of reconstructing this passage. The following recall of the text is given by Suzy:

Suzv:

There was a lot said about Skinner and, for instance, Ivan Pavlov and the psychologist Ebbinghaus and research results. That's always fun to read about. And then all this, there were some statistics about Chile, for instance, and that's interesting and I've always been interested in South America . . . and Spain too. And then there was something about the torture methods of the Greek junta and you sort of got bad feelings when you read about that kind of thing, even if it's interesting.

Here the torture passage is mentioned as if it were in itself part of the main theme of the text. There is no indication that Suzy reconstructs the passage as subordinated to the theme of learning (or classical conditioning), which is the "talked-about state of affairs" (Rommetveit, 1982, p. 16) with which the passage is used by the author. This tendency of not maintaining the 'vertical' relationship in the text typifies the accounts of a substantial proportion of the participants in the study. To borrow an expression from Gestalt psychology, what appears problematic is to discern the 'figure-ground relationships' that are used in the text, i.e. the relationships between what is in the forefront of the discussion and that which forms its background.

Another example of how this passage was perceived yields signs of similar problems:

### Interviewer:

Do you remember the very first example in the text, I mean the example that the whole text started with?

## Sean:

Yes, it was about torture, a man was being tortured . . . under the Greek junta.

Interviewer:

Could you tell me a bit about it?

Sean:

Well, first...he was lying on some stretcher, this man. And, how there were people around him exposing him to different kinds of experiments. They had electrodes and touched his body and... before they had started torturing his body he'd scream. And then they took the electricity and all that behind his head so that he couldn't see when they approached his body... And then they attached them to his skull and... then they examined his heart and... Yes, well I don't remember anything else. I do remember though that it all ended with their leaving him on his own...

Interviewer:

Why was it placed here, this example, do you think?

Sean:

Yes it was to show through violence one can get people to learn other things than what they have learnt before...

Interviewer:

What was this an example of, this . . . ?

Sean:

It was an example of ... how the junta tried to ... Well, it was probably some opponent of the Greek junta and they tried to get him to get rid of ... to forget everything that he had learnt earlier on ... they tried to indoctrinate him ...

Here we can note two features that are interesting from the point of view of knowledge mediation through reading. First, although Sean recounts the torture scene at considerable length and quite accurately, he does not say anything about the process of conditioning which was obviously the reason why the passage had been selected as an appropriate part of the present text. Again from a communication perspective this can be considered as a distortion in the figure-ground relationships of the text. The phenomenon which the author attempts to 'make known' is conditioning (as a variant of learning), and it is this which is the 'figure' and the torture scene from Greece—in spite of its prominence in the text—which is the 'ground'. Sean in his recall, or decoding, reverts this figure-ground pattern, and focuses on the torture scene as if it were itself 'the talked-about state of affairs'.

Second, when Sean, having been prompted by the interviewer, does subordinate this passage to the general theme of learning, he states that it is intended to illustrate how violence can be used to 'teach' someone something against his own will, and that this is a specific form of learning. Now when the excerpt about the prisoner is considered in isolation and not as a part of this particular text, this appears to be a perfectly

appropriate mode of recalling it. It can be considered, and used, as a story illustrating how torture is used for political purposes, to brainwash dissidents. In that sense this recall is a reasonable and perfectly coherent mode of retelling this section, but—and this is our point—not of reconstructing its message within the overall framework of the text. If the communication situation were to be construed as allowing the reader a free choice in determining what to attend to, and in whatever way was felt to be appropriate, any further discussion on criteria of 'correctness' of interpretations would be futile. However, if we assume that in this particular pedagogical context the power of decision over what is being talked about is asymmetrically distributed (in the sense that the (possible) expansion of the reader's conception of reality relies on his or her temporary subordination to the line of reasoning suggested by the author), then the apparent failure to 'agree on' what is being talked about can be understood as a problematic element in the process of mediating knowledge.

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To give another illustration of the problems of establishing intersubjectivity between text and reader, we can take a passage which was an example to illustrate something general. The passage dealt with the difference between a deep and a surface approach to learning, which has been examined in previous chapters of the present book. The example used was about the training of graduate professionals and of subprofessionals in developing countries as compared to industrialized ones. It was pointed out that in developing countries, this proportion is often very unfavourable, while in the industrialized countries it is much better (meaning a higher proportion of sub-professionals to professionals). The countries used as illustrations were, on the one hand, Chile, and on the other the USA and Sweden, and the occupational groups used as concrete examples for the comparisons were doctors and nurses.

Neither Suzy nor Stan relates this passage to the topic of learning. What is said about Chile is treated as if it formed a part of the main theme of the text itself, and not as if it were a means to concretize differences in the outcome of learning.

# Suzy:

And then all this, there were some statistics about Chile, for instance, and that's interesting and I've always been interested in South America ... and Spain too ...

### Stan:

There were examples from the situation in Chile, where there were three doctors to one nurse or something like that, from a Swedish point of view a very bad proportion and even more so compared to America where there were seven nurses for every doctor, I think. That's the kind of picture that I very vaguely have. I mean, its the same impression that you get from reading the newspapers, for instance, about how things are in the underdeveloped countries.

By contrast. Dora and Dave clearly perceive that the information about the education of doctors and nurses in different countries has the status of an example.

### Dora:

Then there was a discussion about the value of different kinds of learning and well, there were other students who had to read another text and they also had to relate this text. It was a text which examined the working relationship between professionals and sub-professionals.

### Dave:

Here they account for yet another example of experiments on how a text was read. They had read about this relationship, that qualified professionals need a large number of special assistants to be able to function properly and there was an example of doctors versus nurses. Thus, a doctor should ideally have a greater number of nurses than the other way around. And then they had seen what these persons got out of this text and ...

This contrast between the two groups of exemplars was again apparent at a later stage in the interviews, when participants were specifically asked why this particular example had been introduced. The responses given by Dick, Dora and Dave provide further confirmation that they have grasped the illustrative function of the example. Suzy, however, states that she does not know why this example was placed in the text, while Sean again assumes that the information given was an integrated part of the text's main theme. He appears to have interpreted the text as dealing with classical conditioning, instrumental conditioning, learning through language and the education of professionals and sub-professionals in various countries.

### Sean:

It depends on when it's written . . . if it's written before '73 or... before the fall of Allende in Chile or...

### Interviewer:

Oh, well, it's older than that . . .

#### Sean:

It's older . . . well, then I think they want to show that . . . how good Chile has been developing and how the development has been in comparison to these other countries.

Stan, on the other hand, perceives that this passage has the role of an example, but he is completely mistaken about what it exemplifies.

### Stan:

Yes, in that context it should probably have some . . . be associated with some kind of behaviour...type of behaviour. The behaviour of different countries or . . .

To sum up at this point, what has been seen can be described as different ways of making sense of two segments of this particular text. Yet the difference between the two groups of exemplars is less a question of what is understood and remembered than of the extent to which what the author attempts to make known is reconstructed. Suzy, Sean and Stan do not seem to have any difficulties in understanding the two passages per se. Rather what appears problematic, it seems, is to discern and to attend to the particular aspects of these illustrations that are relevant to the line of reasoning adopted by the author.

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Suzv. Sean and Stan seem to have adopted what Svensson (see Chapter 4) calls an atomistic approach. In consequence, in terms of the figure-ground analogy they seem to construe figures that are only partially related to the ones suggested by the author. However, and this seems important, their ways of making sense of these paragraphs are not wrong in any absolute sense and do not violate basic rules of language use. Nor is it reasonable to assume that general intellectual deficits would make it impossible for Suzy, Sean and Stan to reconstruct the messages as intended. (Indeed it should be noted that the performances of Suzy and Stan on the Vocabulary Test were far superior to that of Dick.) Our search for an adequate interpretative framework must instead focus on the assumptions held by these readers/learners about the nature and purposes of this task and the criteria of understanding relevant to this particular situation. Before attempting this, let us however comment on some other findings indicating differences in how the exemplars made sense of what they had been reading.

In continuing our search for the nature of the intersubjectivity established between the reader and the text, we shall add some observations from two other sources that reveal interesting differences. The first source was a very open and non-directive question asking participants to give their general reaction to the text. It was phrased as "Well, what did you think of this text?". A striking difference is once again apparent. Consider first the accounts given by Suzy, Sean and Stan.

Suzv:

Well, I really think one should have had more time on it. 'Cos after all one gets a bit distracted and I find it difficult to concentrate on reading.

Sean:

I think that . . . what was said at the beginning about different methods of learning was rather interesting. To see how . . . that there are very different ... many different methods for learning things.

Stan:

Well, I found it very interesting.

Interviewer: In what way? Stan

Because I'm rather keen on that sort of thing and the arguments presented. Maybe it's an illusion, but I think you learn something from such things ... You sort of learn. At the end there were also such nice comments about deep structure and surface structure. Such things fascinate me very much.

These excerpts contain general reactions to the test as a learning task and some comments about how interesting it was found to be. Dick, Dora and Dave also comment on their interest in the text, but add a very specific remark.

Dick:

Well it tied in with the questions we discussed earlier, sort of. Why some people find it easier to learn and remember, and how you remember things and so on.

Well, it is about the very same thing that we're doing right now... That's what's so funny about it, I think.

Interviewer:

Yes... How do you mean ...?

Dora:

Well, I mean what we talked about earlier, it relates very closely to what I was saying . . . It all comes back here in this.

Dave:

It was interesting. We had just been sitting here talking about learning and of course I thought about that. What was said corresponded to a certain degree with the ideas I had and it was interesting to get it confirmed all this about the activity and so on and thinking independently. That's what I also said is the most important thing about learning, that you should be able to apply it in a wider context and not just churn it out by heart.

What is added in these comments is an explicit recognition that the text deals with the very same situation as was discussed in the initial interview. These participants, in contrast to their counterparts above, thus spontaneously react by pointing to the thematic continuity between two different instances of communication, the interview and the text. Furthermore, throughout the continued questioning they compare what they themselves had said about learning with what was said in the text. A striking difference between the two groups of participants thus concerns to what extent the content of the text has been explicitly seen as offering the possibility of changing (or confirming) the conception of learning that the individual brought to the situation in relation to the conception presented in the text. According to the view of human learning introduced earlier in this volume and described as characterized by changes in conceptions of reality, it is, we would hold, precisely in such encounters

between different conceptions of the same phenomenon, or between different 'versions of the world', that new insights may result, i.e. that learning can occur.

The second source of data to be commented upon here derives from the concluding interview, where the participants were encouraged to report on the associations they had been making while reading and to explain to what extent and in what way the text had reminded them of things they had experienced or read about. Here too clear differences between the two groups can be discerned. Dick, Dora and Dave constantly talk in terms of the overarching theme of learning and the various scientific investigations and experiments they refer to are always explicitly accounted for as illustrations of learning. They also explicitly and spontaneously make comments which indicate an active attempt to identify the 'talked about state of affairs', as is illustrated by Dave:

### Interviewer:

Can you describe how you went about reading the article?

### Dave:

I didn't look the article over first, instead I started reading it straightaway, something that I don't usually do, usually I'll skim through them rather quickly sort of to see what it's all about . . . But here I just read the introduction and then I understood what its slant would be . . . I understood that it would be going to deal with different forms of learning . . .

Suzy, Sean and Stan, on the other hand, do not seem to be directed towards identifying what the author attempts to make known in the same active way. They have difficulties in identifying and expressing what theme the author addresses, as is exemplified by the following quotation from Suzy.

### Interviewer:

What did you see as of most importance in the text? What did the person who wrote it want to get across? Could you say that in just a few sentences...

# Suzy:

Wanted to say? Hm, it's difficult to say really.

# Interviewer:

Hm, what title do you think you would want to give to this text?

# Suzy:

What title to give it ... well ... in the introduction there it referred back to the Greek junta. Then there was a lot of research stuff and then there ... Well, there were sort of a lot of different things which come in there all the time like ... No, I need to have more time to sort of get ...

The questioning also yields signs of differences in how the two groups

of participants inject meaning into what they read and what kind of associations the text evokes. The statements given by Suzy, Sean and Stan imply that they had been reacting to the text, and to the various parts of it, in a way that was not related to the messages the author intended to convey. They atomize the text and they use the parts which they themselves have singled out as a basis for injecting meaning and for associating. In so doing they miss the intended relationship between parts and 'wholes', and the possibilities of profiting from the insights offered by the author are, we would assume, impaired.

# Reading with the Intention of Learning

In accordance with the logic of research adopted in this volume, our search for an interpretative framework encompassing differences in how the participants made sense of this particular text should focus on possible internal relationships between approach and outcome (cf. Marton and Svensson, 1979). In other words, in functional terms, it should focus on what the participants were doing in this particular communication situation, and the assumptions they held about it.

As will have been evident to the reader, the two groups of participants focused on here were selected since their approach to learning could be identified as instances of a deep (Dick, Dora and Dave) or a surface (Suzy, Sean and Stan) approach. The latter display indications of what has been described in Chapter 3 as a surface approach (an orientation towards memorizing, focusing on the text per se rather than what the text is about, etc). But a further salient difference was found to reside in their conceptions of knowledge and learning. These differences in conception, as we saw in Chapter 3, are linked to differences in approach. Thus Dave, Dick and Dora see knowledge as offering an improved understanding of reality through the abstraction of meaning, while for Sean, Stan and Suzy on the other hand, knowledge is equated with 'information' or 'facts' which are learned through memorization (Säljö, 1982, pp. 76–91). How then can the relationship between approach and conception help us to understand how the text is apprehended by Sean, Stan and Suzy?

The point we wish to make is that this subjectively coherent picture of what knowledge is and how one learns serves as a premise for and a limitation upon the sense-making activities assumed to be appropriate when approaching a discourse with the intention of learning. If this conclusion is valid, the major learning problem in this instance is that a surface approach seems to imply that the text is not decoded on the premisses on which it was written, and the reader, in his or her role as learner, does not seem to be directed towards reconstructing its messages. In this sense, a surface approach implies a violation of the fundamental rule of role-taking summarized by Rommetveit (1982) when analysing dyadic interaction in terms of the "constellation of the speaker's privilege and the listener's commitment" (p. 16). In the present case the privilege of deciding what is brought into focus in the dialogue between text and

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reader lies with the text (and its author) and the commitment or responsibility to determine what is being meant lies with the reader.

In comparison to oral communication the written discourse thus implies a different distribution of responsibility for controlling the progress of the 'dialogue'. Once writers have encoded their message, it leaves their charge: reconstructing what is made known is at the discretion of their readers. This means that even in cases where messages are interpreted as running counter to what the readers themselves happen to know or assume, the reader must — in one way or another — provisionally accept the line of reasoning followed by the author while they are reading. Thus, the reader/learner must grant to the writer the active role in directing the dialogue, provisionally accept the premisses the writer has introduced, and search for the messages or 'wholes' pointed to by this anonymous communication partner.

At a general level, this seems to be a significant part of the problem which Suzy, Sean and Stan have in reading this kind of text. Since their implicit assumptions of learning and knowledge lead them to focus on 'information' they can see no obvious way of dealing with much of what is said in the text nor with the general line of reasoning developed. In fact, they act as if they lack what we might call a cognitive category corresponding to a conception of a phenomenon. This of course does not mean that they did not have any preconceived ideas about the phenomenon of learning prior to the reading of this particular text. What it does mean is that they do not see it as the purpose of the general situation they are in to confront their preconceived assumptions with the ideas presented by the author. For them, changing one's conceptions of reality is not what has come to be associated with the specific task of learning in this kind of context.

# **Concluding Comments**

To recapitulate, it follows from what has been said that the distinction between a deep and surface approach is not meaningful in all contexts. If the distinction is to be useful in analysing how people learn, the learning material should have the same general character as that used in the studies presented in this and in previous chapters, i.e. a text which presents arguments, scientific principles and constructs, and/or is intended to provide a coherent way of explaining or analysing a phenomenon. Should the learning material be of a different kind, (listing, for example, German prepositions which take the accusative case), this distinction might not be at all applicable or enlightening. Learning of this latter kind has very much the character of acquisition of information, and mastery of the task is probably to a large extent a function of the time and energy one devotes to memorizing. The pedagogical problems in such situations are obviously different from those dealt with here.

Instead the question of what approach a person uses when learning through reading becomes critical when we deal with texts which have a message character. In such instances our research indicates that a surface

approach is associated with decisive difficulties in understanding. Furthermore, the conception of the what and how of learning which underlies this approach makes it rather difficult to deal with the more provisional and conditional types of reasoning which are quite often found in this kind of text ('assuming that A and B are related, we find that the process C can be explained in the following way...'). To a large extent it seems as if the premisses underlying this kind of reasoning and the qualifications imposed are disregarded by the students in the learning process, and what are left as appropriate 'targets for learning' are more definite statements shorn of such qualifications and with a more factual appearance (see Säljö, 1982, for a fuller discussion).

A discourse of the kind used in the present study is thus not a list of unambiguous and fixed statements about the world. Instead it can be conceived as a conscious attempt to reorganize current 'versions of the world' and to provide conceptual tools and contexts for understanding that have emerged from scientific experimentation and theorizing. From a communication perspective, the text is an invitation to attend to some more or less familiar aspects of reality within a framework that may not be part of our everyday thinking with respect to this class of phenomena. The reader is offered the possibility of expanding his or her current repertoire of 'world-versions' and of adding alternative ones which might never present themselves as a result of day-to-day experiences. However, this is only a potential which is dependent for its realization on the approach the reader/learner uses.

A conclusion of our examination of learning approaches would thus be the somewhat paradoxical statement that to quite a large extent it is the intention to learn from the text which leads people to misunderstand it. When a text is defined as an object of learning this seems to affect how it is made sense of, and prominence is given to criteria of relevance which are not those adhered to in other reading situations. The distortions of the 'figure-ground' relationships in the text, the problems encountered in discerning the 'vertical' dimension of the text (the horizontalization phenomenon), and the more general difficulties in grasping the contextually relevant meanings, are not, we can safely assume, characteristic of how Suzy, Sean and Stan relate to written texts in other contexts. Were this to be a problem characteristic of their reading in general, it could be interpreted as a severe dysfunction. It is our assumption, however, that the crucial process of decoding a text on the premisses on which it was written, is the natural mode of acting in everyday reading situations. In such situations, reading is characterized by a voluntary and self-induced decision to attend to a written discourse in which there is a genuine and momentary desire to find out what is 'made known'. A basic feature of a deep approach therefore seems to be that this attitude is also maintained in a situation where there may not be such an initial commitment on the part of the reader, but where the reading is undertaken in response to a request or requirement.

It also follows that we can view students' approaches to learning from texts, and their conceptions of knowledge and learning, as social phenomena that evolve as a response to long exposure to educational situations. There are many factors which might be seen as reinforcing this way of learning: overloaded curricula, forms of assessment requiring the more or less verbatim recall of facts and even the design of text books, which can present knowledge in such a neatly parcelled way that there is scope for little beyond mere memorizing. Nevertheless, to suggest that schools may encourage a surface approach is not to level an accusation, for the conception of learning endorsed in schools is modelled on what this concept is commonly assumed to refer to in society at large. A static and factual conception of knowledge is not an invention of schools, as many critics seem to assume; it is a part of commonsense thinking. Without going too deeply into this fascinating topic, the dominance of a factual view of knowledge among teachers and learners can be seen as a consequence of its domination of the larger cultural context of Western everyday thinking, where there is a strong tradition of construing knowledge in absolutistic terms. As Douglas (1971) observes, "Absolutist (non-situational and noncontextual) thought is not the product of some mad scientist. Absolutist thought is a fundamental part of Western thought" (p. 39). What we have referred to as a 'fact' stands as a symbol, unreflective and taken-for-granted, of what knowledge should look like, and it is thus not particularly surprising that educational activities often start from this platform. Nor should we be surprised that students have difficulties when this definition of knowledge is challenged (cf. Perry, 1970).

But can the conclusion be drawn that a deep approach is more efficient than a surface one? We hope the reader has been able to conclude that this is not necessarily the case given a long tradition in education of what characterizes pedagogic situations. A surface approach is obviously a rational approach to the way in which schools "do business" (Becker, Geer and Hughes, 1968). In higher education, however, the demands of learning are in many cases of a different kind, since students have to work much more independently and have to deal with a substantially larger volume of written material. In that setting, a surface approach can be detrimental.

The problems students encounter in reading are thus not merely—as is commonly assumed—efficiency problems, a question of speeding up teaching and learning in a one-dimensional process of fact-gathering. Our literate culture has made possible a conceptual development in which a multitude of 'world-versions' appear and are continually modified. A dynamic conception of knowledge, a commitment to seeing reality from new and previously unfamiliar perspectives, is thus built into the scientific enterprise itself. Though this is self-evident to the trained academic, it may appear as strange and unfamiliar to the student. Coming to terms with it causes pedagogical problems which are bound up with changes in conceptions of reality and the expansion of intellectual repertoires.

Scientific texts offer new 'versions of the world', or fragments of these, and the act of learning through reading may thus be seen as entailing an implicit commitment to transcend assumptions about reality which are

firmly grounded in our everyday experiences. In our culture, knowledge deriving from personal experience and therefore 'true' in the everyday realm may have to yield to an alternative mode of conceptualization which stems from a scientific 'version of the world'. A distinctive feature of collective and individual learning in our scientific mode of thinking is thus an "increasing capacity for emancipation from immediate 'bodily engagement' in . . . objects and events" (Rommetveit, 1974, p. 43). This is the process of abstraction and detachment from the world close at hand which writing per se has made possible, and which confronts us today with pedagogical problems in our attempts to convey its insights to coming generations.

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# CHAPTER SIX Learning from Lectures

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### Introduction

Within higher education, lectures continue to be a dominant feature of many courses, and their prominence is reflected in the large body of research that has been carried out on lecturing as a method of teaching. For the most part this research has been conducted from the perspective of the teacher or the researcher rather than from that of students; the emphasis has been on the identification of teaching skills and teacher characteristics associated with 'effective' lecturing.

The study described in this chapter was an attempt to look at lectures as they are experienced by students. In particular, it examined students' experience of the relevance of lecture content: in other words, how students experience and interpret the meaning of what is being said in a particular lecture. And since the study took place in the natural setting of the students' undergraduate courses, it also explored the influence of the course context upon learning from lectures.

# **Existing Studies**

The prominence of the lecture in undergraduate teaching has stimulated considerable research and discussion (see, for example, Bligh, 1974; Brown, 1978). In the main, empirical studies have shared the single aim of assessing the relative effectiveness of lectures as a teaching method. In his review of this research, Bligh (1974) distinguishes between three main objectives for which the lecture method may be used: acquiring information; promoting thought; and changing attitudes. His conclusion from the available evidence, however, is that while the lecture is as effective as other methods for transmitting information, it is not as effective as more active methods for the promotion of thought, and should not normally be used when changing students' attitudes is the objective.

If Bligh's conclusion seems fairly clear-cut, we should recognize that the limitations of the research from which it stems. One limitation is that the focus of investigations of teaching has been virtually exclusively on method, in isolation from setting. As McKeachie (1978) observes, a college course cannot be divorced from the total college culture: a method of teaching greeted enthusiastically by students in one institution may be less than warmly received in another. Linked to this is the

problem that research has for the most part concentrated on trying to measure the impact of lectures by testing students' knowledge before and after they have been exposed to lectures and other methods of teaching. The fact that the findings of a large number of these studies have been inconclusive can be seen as a consequence of their narrowness of approach. There has been little attempt to look at lectures from the standpoint of the lecturer, or to explore what students' experiences of lectures have been. Where the attempt has been made, however, the picture presented is a rather different one. Method looms less large, and instead the focus shifts towards factors such as attitude, enthusiasm, involvement and the qualities of the relationship between lecturers and students.

A rare glimpse of lecturers' experiences is given in a study by Sheffield (1974), who invited twenty-three Canadian lecturers (identified as excellent teachers by a sample of their former students) to write about their teaching. All twenty-three used the lecture as the chief vehicle of their teaching and were broadly in agreement that the most important role of the teacher is "to stimulate students to become active learners in their own right" (p. 199). Other areas of agreement included the belief that there is no one way to teach; the general acceptance that students are important, or are liked, respected or cared for; enthusiasm and love for their subjects; and lastly, a stress upon the importance of preparing properly and on conveying general ideas rather than details.

One of Sheffield's own conclusions, based on his examination of both the essays and students' descriptions of the 23 lecturers is that "attitudes towards students and teaching are more important than methods and technique" (p. 215). To this statement, however, he adds the rider that "little is known about how attitudes are formed, less about how they may be changed" (p. 215).

# The Students' Perspective

One pathway towards a change in attitudes may well lie in helping lecturers to gain a greater understanding and awareness of the lecture situation as experienced by students. In fact there are a small number of studies concerned with a student perspective and though none of these deals intensively with students' experience of lectures, each does include lectures within a more widely based investigation into students' experiences.

An early study by Marris (1964), for example, involved "discursive interviews in which students were encouraged to talk freely" (p. 2). Its aim was to examine "how the experience (of higher education) appears to the students who go through it" (p. 2). One of the many questions Marris put to students was what they wanted from lectures and what in their experience distinguished good lectures from bad. Whilst Marris' questioning was generalized rather than specific and likely to elicit students' perceptions of their 'ideal' lecturer or lecture, he found that "after techniques of presentation, and clarity of arrangement, the students most

often mentioned the importance of a lecturer's interest in his subject, and his ability to make it interesting to his audience, so that they were stimulated to pursue it further" (p. 49). In the light of the students' comments. Marris concluded that:

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"The essential function of lectures is to place knowledge in a meaningful context. By his synthesis of different points of view, or textbook treatments; by his emphasis on essentials, and the extrapolation of basic principles; by the clarity with which he relates the parts of his exposition, a lecturer can enable the student to perceive the subject coherently. But, perhaps even more usefully, he can provide a more personal context, showing why the subject interests and excites him, how he has used it in his own experience, how it relates to problems whose importance his audience already understands. From this, the student can more easily imagine how he himself could use it: he develops his own context of motives for mastering a problem." (Marris, 1964, p. 53)

A more recent study by Parlett and others parallels Marris' investigation in its concern to examine and discuss "the experience of academic life more directly from the point of view of its principal consumers, undergraduate students" (Parlett et al., 1977, p. 2). Again, like Marris, Parlett and his colleagues tried

"Especially at the beginning, (to) let the students talk freely about their courses, the way they were taught, the way they learned, the staff they knew, the problems they encountered, and the hopes and disappointments they privately harboured" (p. 3)

The interviews were deliberately informal and relatively unstructured, and although the aim was to look at university experience as a whole, many of the students' comments were about lectures. These were mostly made in response to the question: 'What are the hallmarks of good teaching?'. This question again is a rather general one likely to invite perceptions which are directed towards an 'ideal' lecturer rather than ones grounded in specific experiences. Nonetheless, a significant difference was found between teachers who were 'interesting and enthusiastic' and those who were 'boring and lifeless'. The concluding observation again puts emphasis upon attitudes towards students and teaching:

"The important point was that teachers should demonstrate their commitment and their 'interest in communicating the subject'. Students want to be stimulated and enlivened by lectures". (Parlett et al., 1974, p. 5).

A study by Bliss and Ogborn (1977), Students' Reactions to Undergraduate Science, takes a somewhat different approach. Students were asked to recount 'good' and 'bad' stories about learning. As the authors comment:

"Lectures form a great part of the normal work of science students, indeed it is no accident that nearly half of all the stories were about them. This makes it particularly important to understand a little better what makes a good, and what makes a bad, lecture experience". (Bliss and Ogborn, 1977.)

Where the students' stories were concerned with lecturing, therefore, the question was not how 'good' and 'bad' lecturers differed but what distinguished a 'good' from a 'bad' lecturing experience. In several stories, Bliss and Ogborn found "a strong element of reacting well to the personal human qualities of the teacher as well as his teaching ability as such" (p. 114). In good lecture stories typical feelings were interest and increased involvement in the subject; while conversely, a lack of involvement was apparently the most common feeling in 'bad' stories. Indeed, Bliss and Ogborn observe that:

"Running like a thread through both 'good' and 'bad' lecture stories are both involvement and understanding. Essentially all 'good' stories mention interest, enthusiasm, and so on, if they mention nothing else. Essentially all 'bad' stories mention their gloomy opposites. Again, both kinds stress understanding or not understanding as the single most frequent reason for feeling 'good' or 'bad'" (p. 114).

Bliss and Ogborn also examine the reasons students give for characterizing their experiences as 'good' or 'bad' ones. They conclude that:

"In 'good' stories, reasons to do with the emotional aspect of the teacher-student relationship are more prominent than in 'bad' stories, where the emphasis is heavily on ideas. It shows also how in 'good' stories, reasons to do with human interaction come more to the fore". (p. 116).

In all three of these studies, therefore, as in Sheffield's study too, the traditionally narrow focus on the effectiveness of methods and techniques has given way to a wider concern with the teacher-student relationship. As attention has shifted, therefore, towards the experiences of the participants themselves, the teacher-student relationship has begun to occupy the foreground of discussion. Yet each of the three studies of students' experience we have looked at has examined lectures only incidentally, as part of the general pattern of undergraduate teaching. A fuller understanding of student learning from lectures requires a more tightly focused investigation, and we turn now to our own study of students' experience of the relevance of lecture content.

# **Background to the Study**

The students who took part in the study were taking one of three different undergraduate courses: a second-year social science research methods course, a final-year microbiology course, and a first-year applied physics and energy course. Each of the courses was a component in the students' degree schemes, and it was the relevance of the content of the lectures given on these courses, as experienced by the students, that formed the main focus of the investigation. As the lectures occurred as an integral part of the students' degree programmes, it was possible to take into account the influence of the students' experience of the teaching and learning context of the three different courses. Information on the perceptions of the different groups of students was collected by informal interviewing throughout each course together with an end-of-course questionnaire designed to tap into comments and concerns expressed during the interviews.

Because of the numbers of students involved, a sample was selected from each of the courses. The students were chosen on the basis of their response to a questionnaire which sought to identify students who thought that interpersonal qualities of the lecturer (e.g. whether or not the lecturer had good student-lecturer rapport), influenced their opinion of the lectures more than impersonal perceptions (e.g. whether or not the lecturer had a wide knowledge of the subject). For each course, between two and six students were chosen from those who were apparently most or least influenced by personal factors, together with a further two or three students who seemed to be mid-way on that particular dimension. Altogether, a total of 31 students was selected.

These students' experiences of the relevance of their lectures were in the main studied through the use of a technique known as stimulated recall. Stimulated recall was originally developed by Bloom (1953) to compare students' thought processes in lectures and discussion groups. It involves audio-taping a teaching situation and then, within two days, playing back to individual students extracts from the session. The students are then asked to recall the thoughts they had during the original situation. As Bloom himself explains:

"The basic idea underlying the method of stimulated recall is that a subject may be enabled to relive an original situation with vividness and accuracy if he is presented with a large number of cues or stimuli which occurred during the original stimuli" (Bloom, 1974).

In the current study lectures were recorded and extracts played back to students within 24 hours. Recall sessions took place with individual students, so that the replies given could be probed in depth. The main criteria used in choosing extracts to play back was whether or not they seemed to reflect aspects of what had been observed, over time, to be each lecturer's characteristic style of lecturing. On average eight extracts from a fifty-minute lecture were chosen and these were each played to the students who were then asked to recall their thoughts or feelings at the time of the extract. Students replies were themselves recorded. In total, 48 recall sessions were carried out with the 31 students.

In the recall sessions students both described what they were doing and thinking at the time of the extract and explained why they thought they had responded in the way they had. The example below shows how students can respond in markedly different ways to the same lecture extract.

### Lecture extract

"The thing to underline I think here is it's not always the organism in maximum numbers which can cause the spoilage—so if you've got 100 organisms in your sample, it's often only 1 to 2 per cent of the organisms present which can actually cause the spoilage that is significant".

### Student 1 recall

"Now here I had a definite thought, yes — 'What I haven't done in my essay', because I think she was giving that as a particular reference to all of us because we'd all done the essay. What some of us, or most of us, had missed out and I was thinking 'Ah perhaps I should have done that in my essay', uh, I was going, just thinking that's a good point and I should have actually done that.... Actually throughout the whole of that part, I think she, there was a lot of information there that I think most of would probably have missed in our essays".

### Student 2 recall

"Yeh, yeh, I remember thinking what a hell of a lot of work there'd be to do because she mentioned there could be about 100 colonies but yet only 1 to 2 per cent causes spoilage. So I was thinking, if you've got a plate with 100 colonies, how many you'd have to pick up before you'd pick up a spoilage organism. That was the main thing, but other than that, but you know it's a pretty standard point really, but it would involve a lot of work to get that".

It can be seen from the above example that the two students are each experiencing the relevance of the lecture content in different ways. The first student is thinking about the lecture content in terms of assessment, in relation to an essay that he had done and whether or not he had included the particular point being made by the lecturer. The second student is thinking more about the meaning of the content, and what the implication might be of what the lecturer is saying. This second student seems to be thinking about the lecture content in terms of his own understanding of it and the meaning it has for him. He is therefore experiencing the relevance of the content *intrinsically*, whilst the experience of the first student, whose thoughts are directed towards assessment, is by contrast *extrinsic*.

Systematic analysis of students' responses to the lecture extracts showed that many responses could be identified as reflecting either extrinsic or intrinsic experience of relevance.

# **Extrinsic Experience of Relevance**

There were essentially two kinds of extrinsic experience of relevance. The first was specific in nature, as in the following example:

"When I checked on to it being experimental design — the next piece of work is on that — we have to design something, design a piece of research work, and I kept — all the way through — I kept asking, how am I going to use this in my work?".

Thus the student is thinking about the next piece of work she has to do. In both this and the earlier example, where the student was thinking about an essay he had recently completed, the students have a specific extrinsic demand in mind and consider how they have tackled or might tackle the task set.

In other cases, the students seem to have no particular demand in mind, nor are they thinking about the content in a way meaningful to themselves. For example:

"You expect what the lecturer writes on the board to be the important things, so whatever you write you get that down".

Here the student seems only to think or recognize that what was being said might *potentially* be useful or relevant. the experience is much more general in nature. The sole reason, apparently, for writing something down is because the lecturer has written it on the board and it must therefore be important. And it is important, one must presume, as something students may subsequently be assessed or examined on.

As just described, an extrinsic experience of relevance, with its emphasis on external demands is, of course, reminiscent of the descriptions given in earlier chapters of a surface approach. Moreover, as we shall see, an intrinsic experience of relevance is qualitatively very similar if not precisely the same as a deep approach. These similarities will be further discussed at the end of the chapter.

# **Intrinsic Experience of Relevance**

In the 'spoilage' example given above, the student realizes that one implication of what the lecturer was saying about the number of organisms that can cause spoilage is that picking up the spoilage organism would entail considerable effort. The student thus seems to be thinking more about the meaning of what was being said, and how it relates to his own understanding and framework of thinking. The student is drawing upon his existing knowledge and fitting this new information into his own framework. He is therefore experiencing the relevance of the content intrinsically.

A second example of intrinsic experience parallels the first:

"I had two thoughts: yes, it does happen in the hospital situation where — they tend — because staff just forget this person, um,

that it's this person's private life — it becomes part of their form-filling. And my other thought was: I don't think it happened where I worked".

Here again the student seems to be relating the content to her own framework of thinking and experience in a way that is personally meaningful.

In both examples the students actively relate the content to their own understanding in a specific way. In some cases, however, the students are more passive. They appear to acknowledge that the material has some sort of relevance to their understanding, but they do not go further and actively think this through. For example:

"I understood it and I found the content interesting, so I didn't stray, my mind didn't wander".

# Influence upon Intrinsic and Extrinsic Experience of Relevance

It was possible to identify three sources of influence upon whether different students experienced the relevance of their lectures as extrinsic or intrinsic: students' general orientation towards the course; the teaching and learning context; and students' background knowledge and familiarity with the subject.

# (i) Students' general orientation

Students' orientations towards the lecture courses differed, and the differences were particularly marked in the case of the research method students, some of whom were following a degree scheme in home economics rather than in human science. For these home economics students, the predominant concern was with assessment demands and how these could be met rather than with what might be learnt from the course. As a consequence, many of these students' statements reflected extrinsic experiences of the lecture content.

For the human science students, on the other hand, the research methods course was more generally accepted as being an important and relevant subject: they were able to recognize the significance of it to themselves and to what they were doing. Of the five human science students studied in depth, three were predominantly intrinsic in their experience, and the whole group of five had a relatively high average level of intrinsic experience.

One might expect to find similar contrasts between students following a final year option which they themselves had chosen (as was the case for the microbiology students) and those who, like the applied physics and energy students, were following a compulsory first-year foundation course. And indeed, analysis of the microbiology students' accounts displayed a relatively high incidence of intrinsic experiences of relevance.

# (ii) The teaching and learning context

Of the three groups of students taking the research methods course, the home economics students, as we have already noted, were the only group not from the Department of Human Sciences. Their perceptions of the teaching and learning context were as a consequence distinctly different from the other students on the course, and displayed substantially less certainty about the relevance of the course to themselves. It was, however, the norm rather than the exception for home economics students to take courses outside their own department and to cope with unfamiliar subjects the relevance of which they could not always see. In such circumstances therefore, one might expect that extrinsic experiences of the relevance of their courses would be frequent and that consequently the most 'successful' students might be those who had best developed work styles tailored to extrinsic experiences. The findings seemed to bear this out, for the home economics students with the highest levels of extrinsic experience of relevance were also those who obtained the highest grades on the course. This finding is all the more striking because it is at odds with the pattern for the study as a whole: generally speaking, the students who were predominantly intrinsic in their experience achieved the highest grades.

THE EXPERIENCE OF LEARNING

The context of the applied physics and energy course was also quite interesting. Amongst the students there was, on the one hand, a feeling of uncertainty about the usefulness and specific relevance of the course, and on the other a high acceptance of the general relevance and interest in the energy component — rather than the physics component — of the course, together with a belief that the course was not so important from an extrinsic, assessment, perspective. These last two factors may have counter-balanced any negative effects of the first. An alternative interpretation is that there were other factors, beyond those associated with the teaching and learning context, which were strong enough to overcome any negative effects of uncertainty and so help to sustain the high degree of intrinsic experience characteristic of this course.

# (iii) Students' background knowledge and familiarity

Another important influence upon intrinsic and extrinsic experience of relevance was the students' background knowledge and familiarity with the subject. Here again the home economics students, who professed to have a poor knowledge of research methods, were a distinctive sub-group. As the course progressed, however, this obviously changed, since the high incidence of extrinsic experiences recorded in the early stages of the course declined as the course progressed. Other students, such as the final year microbiology students and the human science students taking the research methods course, were obviously more familiar with their subject and their recall statements reflected comparatively greater degrees of intrinsic experience. Again the first-year applied physics and energy students were interesting because they had an

unusually high perception of their background knowledge, and they displayed an unusually high level of intrinsic experiences despite the doubts they expressed about the usefulness and specific relevance of the course. One student, for example, commented that he could not altogether see how the course fitted in with his other courses. However, he felt very familiar with the course content and to a large extent experienced its relevance intrinsically. Moreover, it was on the apparently more familiar material of the physics component of the course that the highest levels of intrinsic experience were recorded, in spite of the fact that it was the energy component of the course that was perceived as the more relevant one.

# Vicarious Experience of Relevance

In analysing the students' experiences of relevance, it was evident that some experiences were closely related to or linked to the lecturer's presentation and were best described not as extrinsic or intrinsic but as vicarious.

Students who experienced the relevance of the lecture content vicariously seemed to do so essentially in one of two different ways. Either they took over the lecturer's perceived interest or enthusiasm for the material, for example:

"... but the energy is obviously very interesting to him, and of course to us, so the way he puts it over is much more interesting"

or, alternatively, the lecturer seemed, in discussing a particular point, to provide an illustration, and example or a description of his or her own experience which students were able to identify with and take on board as something recognizable and interesting. Thus it was the illustration or the example that the student could relate to rather than the underlying issue being discussed, as in the following instance:

"It was interesting, wasn't it? Interesting to see what - just the information — her explaining her work in another country, what the attitudes are like. It was interesting".

The vicarious experience of relevance is therefore qualitatively distinct. It differs from an extrinsic experience in that it does not seem to be associated with external demands and it differs from an intrinsic experience in that students do not quite seem to see the content in terms of their own view of the world and their understanding of it. Instead the students seem to relate more to something the lecturer offers, whether that takes the form of enthusiasm or an interesting and recognizable illustration or example. Vicarious experience is thus very closely linked to the lecturer, perceptions of the lecturer, and the lecturer's presentation. Interestingly, amongst students who had closer contact with the lecturer (for example, because the lecturer was also their tutor) there was a stronger likelihood of vicarious experience. Furthermore, the students who apparently knew their lecturers best tended to record the highest

incidences of vicarious experience, as did those students with the most positive perceptions of their lecturers.

THE EXPERIENCE OF LEARNING

Vicarious experience is arguably the most significant level of experience identified because it brings to the fore an important potential role of lecturers as facilitators of intrinsic experience of relevance where that might not otherwise have occurred. Indeed, in many cases it was very difficult to differentiate rich vicarious experiences from intrinsic ones and there was every reason to believe that the former could easily lead to the latter. There was, for example, one lecturer whose style of lecturing was such that a great deal of vicarious experience seemed likely to be associated with her lectures. She made extensive use of vivid examples and illustrations, tried hard to bring the subject alive and spoke in an enthusiastic manner. This can be illustrated to some extent by comparing an extract from her lecture notes with the transcript from her actual lecture.

# (1) Extract from lecture notes:

"Commercial process; that they are loaded on the deck of the fishing vessel, may be tumbled, gutted and often contaminated with bacteria".

# (2) What the lecturer actually said:

"I'm sure you have seen pictures, on television and things, of what happens to the poor old fish, they are tumbled on deck, they are trodden on, they are handled, they are gutted, and they are washed and all these operations add enormous other organisms to them".

And yet, despite this lecturer's style of lecturing, the level of vicarious experience associated with her lectures was not exceptionally high. There was evidence, however, of considerable intrinsic experience which frequently seemed closely related to vicarious experience. For example, in response to the above extract one student recalled:

"It sort of flashed through my mind, actually picturing what happens because I've seen them pulling their catch in, the trawl. It was just like that, they sort of tread all over them, I thought goodness me, how do they ever get back, if they're not in one piece are they fairly fresh ...? Imagining all the bacteria on their boots coming off on to them . . . I was just imagining it".

It could be argued that this student not only accepts the vivid picture offered by the lecturer (which would make the experience a vicarious one) but goes beyond it in picturing it for himself: 'How do they ever get back, if they're not in one piece are they fairly fresh?'. The student therefore experiences the content intrinsically rather than simply vicariously. Further evidence that many of the intrinsic experiences of this lecturer's students were closely related to vicarious experience of her 'vicarious' style came from analysis of three other students. For one lecture recalled by all three it seemed the lecturer did not achieve her usual level of vicarious projection. The students' experiences of the lecture were mostly extrinsic with apparently hardly any vicarious experience. In the case of a later lecture, however, two of the students' statements reflected greater degrees both of vicarious and of intrinsic experience of relevance. Similarly, the third student recorded more vicarious and more intrinsic experiences for an earlier lecture. In other words, in those lectures where the three students recalled higher levels of vicarious experience, all three also recalled higher levels of intrinsic experience. And conversely, when the incidence of vicarious experience was low, all three recalled high levels of extrinsic and low levels of intrinsic experience. As far as this lecturer was concerned, therefore, there was an evident relationship between the levels of vicarious and intrinsic experience associated with her lectures.

There was other evidence too, from this and from the other two courses studied, which indicated that vicarious experience could be seen as pivotal and transitional. Where vicarious experiences were few in number, extrinsic experiences tended to be frequent, and where vicarious experiences were abundant, there was also greater numbers of intrinsic experiences, suggesting strongly that vicarious experiences could serve as a bridge towards experiences of an intrinsic kind. The implication of this finding for teaching is clear-cut, especially when seen alongside the earlier finding that vicarious experiences were highest amongst students who knew the lecturer best and who were the most positive in their perceptions of that lecturer. By seeking to heighten vicarious experiences amongst their students, lecturers may help to bring about the personal understanding which is the hallmark both of intrinsic experience of relevance and of a deep approach to learning.

# **Experience of Relevance and Student Learning**

As the study we have just described has shown, students seem to experience the relevance of lecture content in three ways, intrinsically, extrinsically or vicariously. And as we suggested earlier, intrinsic and extrinsic experiences can be related to deep and surface approaches to learning. Where an experience is intrinsic or an approach deep, students perceive learning as bound up with themselves as individuals. As Marton observes, when students adopt a deep approach:

"They grasp the fact that the university subjects they are reading have to do with the same reality as that of their daily lives. This means they make use of their knowledge and skills". (Marton, 1975a, p. 131)

As described in this chapter, intrinsic experience is very much about students making use of their knowledge and skills. Similarly, there is a strong link between extrinsic experience and some of the characteristics of a surface approach as Marton describes it:

"Learning does not take place in a vacuum, but in various social

contexts. Learning situations are characterized by the demands they make, primarily in the form of exams, grades, etc. Thus it is a matter of external demands, to some extent inescapable: one must try to learn certain things not because one wants to find out something, but because someone else thinks that one ought to learn them for the future". (Marton et al., 1977)

Marton suggests that in a surface approach, the aim is not to find something out but to be able to reproduce a text or to answer specific questions. Students who experience relevance extrinsically similarly focus on what is necessary to fulfil external demands such as these.

It is the vicarious experience of relevance, however, which is potentially the most important result of this study. This finding is especially interesting in relation to traditional research on lectures, a striking feature of which is the frequency with which characteristics or skills of the lecturer such as 'maintenance of student interest', 'lecturer enthusiasm', and 'lecturer-student rapport' have been identified as 'effective' (see for example Cohen et al., 1973; Wimberly and Faulkner, 1978; and Hildebrand, 1973). What that research fails to do, however, is to clarify the relation between those characteristics and skills and student learning.

Vicarious experience establishes the nature of this relationship. In the course of a lecture, students whose experiences might normally be largely extrinsic may find their interest in the subject matter itself kindled by the lecturer's enthusiasm, or, through the medium of a vivid example or illustration, see the content of the lecture as having meaning in the real world. Vicarious experience of relevance can thus be viewed as transitional, providing a bridge between extrinsic experience or a surface approach and intrinsic experience or a deep approach. Through vicarious experience of relevance, therefore, it becomes possible for the lecturer to help students to go beyond the outward demands of a learning situation and make connections between the content of the lecture and their understanding of the world around them.

# CHAPTER SEVEN

# Learning and Essay-writing

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In every work regard the writer's end Since none can compass more than they intend

Alexander Pope, Essay on Criticism

### Introduction

In the arts and social sciences, essay-writing is the undergraduate's Amazon. Throughout a degree course, the processes of studying often proceed along a river of coursework essays—the equivalent of one essay every ten days in some universities (Nimmo, 1977). Essay-writing occupies this central place within higher education because it serves two fundamental purposes: it is both a tool of assessment and an avenue to learning.

The coursework essay has not always had a part to play in assessment. Until the 1960's, the only essays which directly determined degree results were generally those written in final examinations where students wrote from memory under severe time constraints. Over the last two decades, however, formal recognition has increasingly been given to the 'coursework' essays which students write as part of their everyday studying. Compared to the exam answer, coursework essays give students an opportunity to draw upon a wide range of sources and allow time for sustained reflection. Collectively, therefore, they can play a part in assessment by providing a reliable record of the student's achievements over a substantial span of time. The adoption of coursework assessment has also been seen as a counter to the debilitating anxiety of 'sudden-death' examinations, although the consequences may be to redistribute stress throughout a course rather than to remove it altogether (see for example Heywood, 1969; Baumgart and Johnstone, 1974).

As a learning activity, essay-writing makes particularly exacting demands of the student. The student must not only apprehend and make sense of a topic, but go further and communicate what he or she knows within the framework of a formal, ordered statement. Essay-writing thus involves putting learning on display. But the task of constructing meaning is made doubly difficult because the student usually has to venture beyond the comparative security of lecture and seminar notes. Other sources have to be tracked down, digested, their relevance to the topic weighed in relation to all of the material at the student's disposal. Finally, what the student chooses to make use of has to be marshalled and deployed within

a discussion of the topic. As a learning activity therefore, the process of essay-writing is inherently more complex than reading and listening, and its product may reflect even more strongly the personal sense which the student has made of what he or she has learnt.

THE EXPERIENCE OF LEARNING

These two purposes of learning and assessment co-exist uneasily. The potential for conflict was first shown in the classic American study Making the Grade (Becker et al., 1968) which has already been referred to in Chapter 1. As one of the students interviewed observed:

There's an awful lot of work being done up here for the wrong reason.... There are a lot of courses where you can learn what's necessary to get the grade and when you come out of the class you don't know anything at all. You haven't learned a damn thing really. In fact, if you try to really learn something, it would handicap you as far as getting a grade goes . . . (Becker et al., 1968, p. 59).

This comment illustrates one of the main findings of Becker and his colleagues. The ways in which students went about learning were influenced by their pursuit of grades, and this could lead to a conflict between the requirements of grade-getting and students' desires to learn in a personally satisfying way. As Chapter 10, "The Context of Learning", will show, these tensions between learning and assessment seem to be a persistent phenomenon which has been found in many other studies.

A further source of tension has been less widely recognized. In discussing essay-writing, it is tempting to make inferences from other domains of written expression, but the parallels are sometimes too easily taken for granted. There is a gulf between, say, the specialist author and the undergraduate essay-writer which extends far beyond differences in knowledge or experience. The nub of the problem is the idiosyncracy of essay-writing, which arises from the setting in which the activity takes place. Firstly, the knowledge of students is generally, though not invariably, inferior to that of their tutors. They may be hard pressed to communicate anything which the tutor does not already know. While the success of the specialist author comes from prompting readers to see some aspect of the world in a fresh way, the success of students may lie in the degree to which they can articulate and validate views of the world which are already familiar to the tutor. Secondly, specialist authors generally choose their own theme and write because they have something they want to communicate. For students, however, the initial stimulus comes from outside, not within. They are required to say something on a given theme whether or not they feel drawn to the topic and whether or not they feel they have something to say. Indeed, essay assignments are what Shaughnessy (1977) calls stipulative: not only topic but mode of expression, depth of treatment, sources, length and preparation time may all be specified in advance. These contextual features determine the conditions of studying, but they do not necessarily create an ideal medium in which learning can flourish. The student's concern to make sense of a

problem may come into conflict with the obligations of the task as assigned. Britton and his colleagues have sketched out the consequences of conflict:

The strategies a writer uses must be the outcome of a series of interlocking choices that arise from the context within which he writes and the resources of experience, linguistic and non-linguistic, that he brings to the occasion. He is an individual with both unique and socially determined experience, attitudes and expectations; he may be writing voluntarily or, as is almost universally the case in the school situation, he may be writing within the constraints of a prescribed task. This he either accepts and makes his own in the process of writing, or he perfunctorily fulfils his notion of what is demanded; and his choices are likely to vary from occasion to occasion and from task to task. (Britton et al., 1975, p. 9, my italics.)

So far we have looked at the incidence and purposes of essay-writing and the potential for conflict within it between learning and assessment and learning and studying. Viewed in any of these ways, essay-writing would seem to be a crucial area for discussion and investigation, yet what we find instead is a puzzling neglect. In some books on undergraduate teaching, essay-writing is hardly mentioned at all, while in others it has been consigned to the corner cupboards of "private study" or "marking problems". Even in study skills manuals, where essays are normally a prime concern, there is a preoccupation with form rather than substance. Accomplishment in essay-writing is often seen in terms of style or bibliographic finesse or as a matter of systematic planning and organization. Amidst the flurry of technical tips, it is hard to get a sense of the student as a "maker of meaning" (Perry, 1977) or of writing as "a struggle to give meaning to experience" (Berger, 1979).

### Previous Research

The neglect extends also to research (Hartley, 1980, p. 64). Most studies of undergraduate essay-writing derive from an interest in the reliability of essay-grading rather than in student learning (see Rowntree, 1977 pp. 188) ff. and for a recent example, Byrne, 1980). There are two notable exceptions. The first is a study by Hughes-Jones (1980) of students' perceptions of the reasons for success and failure in exams and essay work. Interest was a prominent factor in accounting for both successful and unsuccessful essays — a finding which echoes an earlier distinction between "involved" and "perfunctory" approaches to written work by secondary school pupils (Britton et al., 1975). The second is a questionnaire study of the essay-writing procedures of 80 Psychology students (Branthwaite et al., 1980). The main findings of the study focus upon dimensions associated with academic success in general: one dimension involved "confidence, self-assertiveness and being in control, as opposed to being pessimistic, unenterprising and being externally constrained", while the other was typified by "the presence (or absence)

of concentrated, individual hard work" (Branthwaite et al., 1980, pp. 103-4). Other findings, however, are more specific to essay-writing. One of these concerns a difference between first- and second-year students: the second-years appeared to be "more product-orientated and more aware of the variety of ways in which one could about essay-writing" (p. 104), and they were more likely to go beyond the recommended texts and to share their ideas with others. A marked mismatch was also found between what students felt tutors were looking for in essays and tutors' own criteria. While originality and understanding were high amongst the criteria advanced by students, none of the seven tutors who also took part in the study mentioned originality and only one mentioned understanding.

This lean harvest of findings reinforces rather than removes the impression of neglect. How students experience essay-writing, what the demands posed by essay-writing tasks might be, and what significant variations might exist between one discipline and another—all these are unexamined questions. As a learning activity, essay-writing remains virtually uncharted territory.

# **Background to the Study**

In the remainder of this chapter, we begin to explore this territory, drawing upon the findings of a study of second-year undergraduates whose main courses were in History (17 students) or Psychology (16 students). The students took part in two sets of semi-structured interviews, each focusing upon a recent essay prepared for a specific course module. The students were invited to describe both the content of the essay and how they went about preparing it, to draw comparisons and contrasts with other essays written for the course unit concerned, and to discuss various aspects of the activity of essay-writing and the course setting within which it took place. The students were invited to bring to the interviews copies of their essays and other associated notes and materials.

In analysing the interview transcripts, the aim was to examine the students' experience of essay-writing as a learning activity against the backcloth of the two course settings. For reasons of space, the discussion which follows deals in the main with the findings for the History students. It outlines essay-practice within the course module concerned and the students' perceptions of the context in which they prepare their essays, as a preliminary to exploring the main findings of the study, which concern differences in the students' conceptions of what an essay is and what essay-writing involves.

# **Essay-Writing in a History Course**

The History students are prolific essay-writers, spending on average almost two-thirds of their working time writing essays. Overall essay workloads vary as a function of different combinations of the five

course modules taken by second year students, but some of the students say that they have to write a total of between 18 and 20 essays over the year as a whole. Within the particular course module investigated, students submit three essays of 2,000-2,500 words in the first two terms and an extended essay of 3,000-3,500 words in the final term. The average time spent on a History essay is 13-15 hours, but individual estimates range from eight hours in the case of one student to nearly 30 hours for another. Students normally have four weeks in which to prepare the essay, and the tutor for the course module usually recommends books to be consulted. Then, as one student says, "you go away and get on with it". The first three essays are linked to fortnightly seminars, where students submitting an essay summarize its contents and respond to questions. The fourth, 'extended' essay is prepared during the final term and draws on primary sources—for example, edited collections of documents such as correspondence and Acts of Parliament. Teaching during the term consists of four lectures, each of which introduces and comments upon one of the four topics assigned and relevant source documents.

The context in which essay-writing takes place is outwardly exceptionally well-organized. Essays are woven into the structure of the course module, titles are announced well in advance and allow some measure of choice, sources of reading are well-signposted and the tutor's written comments on essays are acknowledged as consistently thorough. In the students' perception, however, this is a less than ideal context for essay-writing. Most of the students not only comment on what they see as a heavy essay workload but feel this has unfortunate consequences for how their time is allocated. For example:

 $Tom^{I}$ :

I mean, basically I'm a full-time essay-writer.

Edward:

[The School of History emphasizes] that you shouldn't concentrate on essays, because they're very narrowly focused, and you don't do yourself any good by concentrating on them. But everyone finds that, I mean, you've just got to do your essays. And they're the ones that get marked.... And that certainly doesn't give you enough time for general reading.

Moreover, there is a widespread feeling that the essay workload leaves little time to dwell on any one essay or to spend much time subsequently reflecting on the tutor's written comments. As Chris puts it:

I've got so many other things to do, (laughs), essays to do, I just sort of churn them out.... You know, think of something else, get on to something else.

In addition to this source of tension between learning and the requirements of studying and assessment, there is a further contextual feature which is striking. Although students may discuss an essay with the

tutor individually if they wish, this is an opportunity which is only very seldom taken up. Equally, the students say either that they do not discuss their essays with one another or that if they do so, discussion is never about content or how one might approach a particular essay:

### Martin:

It's all centred around marks, really.

### Graham:

They talk to each other about how they haven't finished it on time, and, oh, 'I have to get an extension', and this kind of thing. But they don't actually discuss essays.

Essay-writing seems therefore an essentially private activity. There is evidently little or no discussion of the problems or processes it entails.

# **Conceptions of Essay-Writing**

In analysing the interviews, the unit of analysis initially adopted was that of the individual essay task. The aim was to look for evidence of differences in how students went about essays which might parallel the well-established distinction between deep and surface approaches to academic reading (see Chapter 3). As the analysis proceeded, however, it became apparent that essay-writing, as an activity, had distinctive meanings for the students which extended beyond the particularities of any one essay assignment and which lent a broadly consistent character to their essay-writing. In other words, the most fundamental difference to emerge from the interview analysis lay in the students' conceptions of what an essay was and what essay-writing involved in the discipline concerned.

In the case of the History students, three qualitatively distinct conceptions were identified, and these can be summed up as argument, viewpoint and arrangement. At the core of each conception is a global or overall definition of an essay, and it is this definition which gives the conception its distinctive character.

# The essay as argument

This, the most sophisticated of the three conceptions, is represented in the following examples:

# Chris:

Being able to construct an argument, that's where for me, this plan sheet here is, like, the key to that because, I get everything in a logical order where everything's building up, you know, and point 1, boom, boom, boom, boom, like that. And so I try to aim that, come the end of the essay, that no matter what they thought before that, the logic of the argument and the evidence produced is such that, even if they don't agree with my interpretation,

they've got to say it's reasonable, reasonably argued. And I think that's one of the things I'm good at, is argument, and constructing an argument.... Tutors aren't looking for sort of, eloquence of style and so on, it's more the argument you present, providing it's fairly clear.

### Tom:

[The tutor] will be looking for a very well-structured essay, very well-balanced. [The tutor] likes you to, you know, weigh the evidence up and come to some sort of conclusion.

### Will:

Whereas in an essay you really have to think about something, and then... well, just keep thinking about it as regards to all the reading and the evidence you're going to use.

### Interviewer:

So it stimulates you to think in a way you don't get from other things?

### Will:

Well, you have to follow a coherent argument, basically. And that's the only time you have to — like in a lecture you don't and in a seminar you just usually state your point of view on a certain point. You don't form an actual, coherent argument, along a broad theme, really.

Each of these students seems to share a common definition of an essay, seen as an ordered presentation of an argument well-supported by evidence. And if we penetrate beyond this global characterization, three sub-components of the definition can be disentangled. The most important of these is an interpretive sub-component:

### Graham:

[Essays] crystallize your ideas on a topic. You learn to put forward a logical argument.

### Edward:

You've got to look for arguments, and prove yourself. I wrote an essay last term in English, and I didn't even use a textbook for it, I just used a text. And I got as good a mark for that, or as good comments, as I would for any History essay. And yet for me it was just reading a text and putting my own opinion forward. Whereas in History I mean you've got to take other people's ideas, and mould them into your own argument.

Essays are thus seen as concerned with the presentation of an argument in which ideas have been "moulded" or "crystallized", as these students put it, into a single entity. An argument therefore pivots upon a distinctive position or point of view on a problem or issue. Within this global definition, the interpretive sub-component is superordinate, subsuming the other two sub-components. The first of these is an organizational one.

A distinctive point of view is not merely advanced but presented in a way which is "coherent" or "logical":

### Edward:

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Conclusions are just, you've really got to just tie everything together then, you've got all your strands of argument. But then conclusions, since I've come to University they've become less important, I think, 'cos your argument should be developing all the way through the essay anyway.

This sub-component therefore reflects a concern with an essay as an integrated whole, in which the point of view to be presented informs the structural conventions of introduction, main text and conclusion.

The second of the two subordinate sub-components of the definition is concerned with data in the form of evidence substantiating or refuting a particular position or point of view. For an argument to be authentic, it must be demonstrated and buttressed by supporting evidence:

### Kate:

... I think I've got a balanced argument, a convincing argument, putting in enough facts, and reference points, to back up what you're saying... I suppose I could've written the essay saying that the court and country divisions were very pronounced by this time, and if I'd been able to back it well enough, then logically I should get the same mark, but I don't really think that that view is convincing enough to be able... to present it.

This global definition, therefore, can be seen as comprising three sub-components, representing specific stances towards three elements of essay-writing:

Data The subject-matter which provides the raw material or

bedrock of essays.

Organization The structuring of essay material into a discussion of

the topic which follows a particular sequence or order.

Interpretation The meaning or meanings given to essay material by the student.

These three elements, which emerged from intensive analysis of the interview transcripts of both the History and the Psychology students, may be considered as *core elements* of essay-writing. They are crucial to an understanding of any given global definition of an essay in two ways. Firstly, the particular stance adopted towards each core element forms a sub-component of the global definition. And secondly, the character of the definition is also determined by the interrelationship of these sub-components. In the global definition we have just examined, organization and data are hierarchically related to interpretation, since decisions on how the essay is to be organized and what evidence is to be marshalled are dependent on the distinctive point of view to be adopted, but this is not always the case, as we shall see.

# The essay as viewpoint

At first glance the conceptions of argument and viewpoint might seem to entail the same definition of an essay:

### Alan:

There must be a technique to writing the perfect essay. Um, I suppose you've got to have a clearly defined argument and a plan of what you're going to do, already written down, so you can always refer back to it, and then start from there.

### Rick:

It's a discipline to getting it, to getting your argument down on paper in a constructive and in a literate sort of fashion... If you didn't do an essay at all and just had tutorials, instead of essays, you'd then learn more but you wouldn't be able to express it so well.

Indeed, both definitions share a concern to present a distinctive point of view and a concern with essays as integral wholes. What sets them apart, however, is the sub-component of data. In the case of two of the five students associated with this conception, the role of data in essays is not explicitly considered. References to data are very sparse and take the most indirect of forms. For the remaining three students, there are some indications that the function of data as evidence has been acknowledged, but the general impression is one of a lack of concern with this sub-component. In this conception, therefore, the global definition reflects only the alliance of interpretation to organization: an essay is seen as the ordered presentation of a distinctive viewpoint on a problem or issue.

# The essay as arrangement

Within the conception arrangement, an essay is defined as an ordered presentation embracing facts and ideas. This definition is largely tacit rather than made explicit by the students concerned. It is strongly implied in the students' accounts of their essay-writing procedures (analysed below), and it can be gleaned too from an examination of its sub-components.

In the stance taken towards interpretation, ideas are viewed disjunctively, as collections of essentially discrete thoughts. It is considered useful or important in an essay to express whatever ideas or opinions one might have, but there is no concomitant concern to marry related ideas to form a unified position or point of view:

#### Donna:

I think [tutors] are asking us to look at secondary sources and just see what we think about them. But — they do want our own ideas, but I think it's limited when you've only got secondary sources.

Sue:

What's distinctive is that I'm here expressing myself, and what I thought, and what my ideas are, in certain subjects, on paper. It's very important to know, it's a gauge how well the course is going. Obviously if you're not coming up with the right ideas, or certain ideas, and aren't able to express yourself, then I think that obviously you've got problems.

The references to organisation are characteristically flat, expressing a commitment to essay structure which is apparently devoid of any consideration of what organizing principles might be appropriate:

### Pattie:

I usually start off with a quote, and then finish with a quote. I find that's the easiest way to start it. But I think the worst thing is starting an essay. Once you get halfway through you're alright. The first few pages...

And where there is a concern with data, the standpoint is at base a quantitative one, displaying a conscientious coverage of sources rather than a regard for evidence supporting a point of view:

### Interviewer:

What do you see as your strengths as an essay-writer? Pattie:

... I think, the um, the presentation: I tend to put quite a few quotes in, and put them down as references.

### Interviewer:

What's studying History at University about? *Donna:* 

I'm not quite sure what it is. I don't know. I don't think we get a lot of our own ideas into it. I know we're supposed to but we seem to be reading books, and criticizing what people think, more than actually — it's sometimes annoying when you're doing an essay, and you don't really know enough facts, but what you're doing is sorting our other people's interpretations, and you feel that you can't really criticize them yourself because you don't know the source material. And so, um . . . I don't know. It just seems to me as though you're reading about a period, and trying to fit your reading into an essay. It just seems like a lot of facts more than anything else.

Finally, what also typifies this global definition is the lack of integration between the three sub-components. In the first two contrasting conceptions, it is the articulation of a distinctive point of view or position which gives an essay its fundamental meaning: the sub-components of organization (in the *viewpoint* conception) or of organization and data (in the *argument* conception) are the vehicles upon which this interpretive stance is conveyed. A decisive characteristic of essay-writing as

arrangement, however, is that the three sub-components are not hierarchically related. Indeed, interpretation, in the form of whatever ideas and thoughts one has, assumes an almost incidental status relative to the other two sub-components of organization and data.

# **Essay-Writing Procedures**

Thus far we have looked at differences in conception in relation to how History essays are defined by the students. But we can also find evidence of such differences in the students' essay-writing procedures. We look firstly at essay preparation—the initial stages of reading, taking notes, and clarifying what will be said in the essay.

When a student conceives of essays as arguments, as in the following example, the elements of interpretation ("his argument", "you make a case") and data ("you've got to back it up with actual facts") are seen in interrelation:

### Interviewer:

What are you looking out for in individual chapters? What will you be getting from them?

### Chris:

Well, really things that are relevant to the question in hand. I try to find the author's own particular view, his argument, and also really just to really plunder it for facts. Whether the facts that he gives, you know, whether I agree with his argument or not, I think that the main thing in an historical essay anyway is that you make a case and back it up with actual facts of what happened, and evidence. Sometimes I just go through a book very quickly and just jot down fact after fact after fact, and, you know, events, what people said, or sometimes I write out quotes, from the time. What people actually did and said. And then I have a good body of things that actually happened that I can then . . . use to support what I want to say. So in a book I'm looking for A, his argument, and then B, facts and evidence.

Preparing an essay therefore entails being attentive both to arguments and to evidence, and the essay emerges out of the interplay between these.

In a conception of essays as viewpoints, however, the element of data is much less in focus, and there may indications that reading is directed by a preconceived view of the line the essay will take:

#### Martin:

Well, I must admit, I had a set idea on the question. And so I went in with that attitude, I got the books, um, again, the same process of going through them, doing the reading, taking notes, analysing, condensing the notes down and then writing the essay out. I mean, it's much the same process, and I knew that it was

what [the tutor] had thought as well.... It was exactly what [the tutor thought, but I believed in it myself as well.

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or even that the interplay of interpretive stance and supporting data is deliberately overridden:

### Rick:

Usually, on the whole, I try and make the facts fit my argument anyway, sort of, or I try and start with the argument in my head anyway. I'll change it, you know, the facts they say . . .

Where essays are seen as arrangements on the other hand, the procedures described seem uninformed by an interpretive focus. Material is assembled in relation to the topic assigned rather than a point of view to be advanced, as in the following account of an essay entitled 'How greatly did English government and administration differ at the end of Henry VIII's reign from the beginning?':

### Frank:

Il chose this question because] it was one that I could deal with systematically, in a way. I could deal with you know, Privy Council, financial administration, Parliament, all these things in turn. It's reasonably easy for research, that sort of thing....I already knew a bit about the subject from lectures, so I had a good idea of what I was going to do in the first place. So basically I was collecting the different things I was going to deal with; just put them down on a piece of paper. Then used the indexes of books, looked it up, and then I dealt with each in turn, collecting material from the different books. I did that ... in rough, and then, when I copied it up, like this, you know, ironed it out a bit, and reorganized it, and put it how I wanted it.

The absence of an explicit interpretive focus is similarly evident in the construction of essay answers, where the students' accounts appear flat and mechanical. There is no apparent criterion underpinning the arrangement of the material:

### Pattie:

You don't put any waffle in, you don't put anything in that's not necessary, not needed, 'cos you just ... you just try and let it flow.

#### Donna:

I read through my notes and try to split it up into sections, so that I can get an essay plan. And then I number the sections. It'll just be usually 1, 2, 3, 4, and sort of, how I argue the name to the group, whatever it is, say, religious conflict, and go down like that. It might not necessarily be in the right order, but then I'll mark it through, and then I'll decide what order it's in. I usually get — probably not in the right order, but it's hard sometimes because various topics merge into each other and you never know how to separate it. Sometimes there's no distinct line, and you get, put bits in the wrong bits, and things like that.

Alternatively, the problem of organization is sidestepped, either by resorting to a chronological sequence or, as in the example below, through reliance on an external source:

### Sue:

If I haven't formulated a very definite plan, and if I'm not quite sure how my essay's going to go, then I'll probably take a main theme in a book and work through that way. I mean in History you might have a problem about whether to deal with ideas, sort of, a chronology, which approach to use.... And if I have got a problem like that, then I'll use the authority, you know, the book. and work through their way.

Where by contrast the conception is of essays as arguments or viewpoints, questions of organization and interpretation are seen as interrelated. The structure of the essay is determined by and subservient to the distinctive position or point of view advanced, as in an account of an essay entitled 'Was Tudor Government at any time a despotism?':

### Alan:

Well first of all I did an introduction, 'What is a despotism?' And then sort of blasted down a few characteristics, then I discussed these . . . like, that uh, that Tudor Government wasn't based upon Divine Right, it was based upon the law. Then I went on to discuss the argument for Tudor despotism, and then try and take, uh, the elements of those who argued for, and argued against them. I tried to keep to the argument, keep the argument very trimmed and streamlined.... My conclusion was, the Tudor Government wasn't a despotism because these particular characteristics of despotism weren't fulfilled.

Striving for a unity of essay structure and interpretive stance also entails attention to the parts which make up the whole:

### Kate:

Every paragraph, I sort of make sure I'm making a relevant point. Is it clear what point I'm making or am I just waffling?

There is an obvious parallel here with what Laurillard (1978) and Ramsden (1981) in their descriptions of a deep approach have called, respectively, "keeping the end-point in mind throughout the solution process" and "integrating the parts into a whole".

# **Essay Content**

If the differences identified in the students' conceptions of essay-writing are valid, then we should also expect indications of these differences in their accounts of essay content. These accounts could not be analysed in their entirety because of the large number of essay topics tackled and the almost limitless range of library sources upon the students could draw, but it was feasible to adopt the stratagem of focusing upon essay

conclusions as the key criterion. This analysis showed that, generally speaking, when asked about their conclusions, in the argument conception the students stated what their conclusion to an essay was, while in the viewpoint conception the conclusion was stated or students said they had arrived at a conclusion but did not specify what this was. Where the students held the arrangement conception they either did not refer to any conclusion, said the essay was not concluded, or outlined a conclusion which merely reiterated the substance of the essay title.

The analysis of essay content was also taken a stage further, however, by scrutinizing the students' 'extended' essays, which were confined to four topics. The overriding aim was to look at the extent to which the essays mirrored conceptions, regardless—it should be stressed—of the historical plausibility of the content or its accuracy. Here only two examples are discussed, both of which are essays on the topic 'What were the main sources of friction between Charles II and the Cavalier Parliament, and how far were they inherent in the Restoration Settlement?'. The essays are respectively by Chris and Frank. As a result of the analysis of the interview data, Chris was ascribed to the argument and Frank to the arrangement conception.

# Chris's essay

Chris's essay comprises 17 paragraphs totalling 4200 words. It begins with what he subsequently describes as a "brief overview of the constitutional arrangements of the Restoration Settlement". The opening paragraph outlines events from Charles' arrival in Dover in May 1660 to the election of the Cavalier Parliament twelve months later. Paragraph 2 suggests that the "underlying premiss" of the Restoration Settlement was "the belief that historical events were cyclical" and a widespread belief that the country had returned to its situation prior to the 1641–2 crisis. The legislation of the intervening years had thus been nullified or its status clarified "in an attempt to construct a lasting settlement". Paragraphs 3 and 4 go on to outline the principal legislative measures of the Restoration Settlement enacted by the Cavalier Parliament.

Paragraph 5 (see Panel 7.1) sets the previous discussion in context and indicates the course which the remainder of the essay will follow. While "this brief overview", Chris says, might give the impression of a "promising enough" future, sharp conflicts had emerged by the middle of the decade. Chris goes on to sketch out his view of the essay question, identifying five sources of friction categorized in two groupings. This framework explicitly maps out the sequence adhered to in the remainder of the essay. First, Chris discusses areas of conflict which arose from ambiguities in the Settlement: finance (paras 6, 7 and 8), the armed forces (paras 9, 10 and 11) and suspending and dispensing powers (para 12). Second, he deals with areas of out-and-out conflict: the religious controversy (paras 13–15), and foreign policy (para 16).

# PANEL 7.1 Chris's essay, 5th paragraph

This brief overview of the constitutional arrangements of the Restoration Settlement gives the impression that the future should be promising enough, but by the middle of the decade the honeymoon euphoria had evaporated and sharp conflicts between crown and parliament had emerged, despite the amelioration and promise of the Restoration. Nevertheless, it is misleading to think of the relations between Charles and the Cavalier Parliament as one of constant friction, because there were many issues that caused no friction and long periods of give and take and relaxed relations in which the process of government functioned quite well. But for the purposes of this discussion I shall concentrate on areas of conflict, even though this may give a distorted impression of relations between King and Parliament. As we shall see, all but one of the sources of these conflict areas were inherent in the Restoration Settlement. There were areas of ambiguity in the Settlement which led to friction over finance, the use of suspending and dispensing power, and the armed forces. Then there were two main areas of out-and-out conflict; the religious controversy and foreign policy. I shall deal with each issue in turn by considering its relation to the Restoration Settlement and by tracing its development during the life-time of the Cavalier Parliament, although it will quickly be seen that all these issues overlapped and affected one another.

# PANEL 7.2 Chris's essay, concluding paragraph

We have identified five principal sources of friction between Charles and the Cavalier Parliament that we have also seen were to some extent inherent in the Restoration Settlement. The areas of ambiguity in the settlement, that is: finance, the armed forces and the prerogative rights of suspending and dispensing power and of determining foreign policy were areas that left room for a considerable development of royal power. However, when the Crown attempted to enhance its power by exploiting these ambiguities and by exercising its prerogative rights, which though not formally confirmed by the Restoration were assumed to have been maintained, Parliament rose to the challenge, attacked and usually prevailed. Religion was the one area were [where] specific Restoration legislation directly led to conflict since the overwhelming Anglican resurgence represented by the Act of Uniformity and the Clarendon Code was committed to fighting any Pro-Catholic and Pro-French policies of the King even though it involved an unprecedented invasion of the royal prerogative. This reveals the shallowness of the Restoration's upholding of royal supremacy in the constitution. Nevertheless, the conflicts of the 1660s and 1670s did not spark off another civil war since they were all kept at the political level and the Restoration Settlement held together despite two changes of dynasty in 1689 and in 1714 because Parliament had become the lynch-pin of government.

The concluding paragraph of Chris's essay is shown in Panel 7.2, and recapitulates the five principal sources of friction discussed. Furthermore, returning to a distinction he had made in paragraph 5, Chris states that religion was the only one of the five areas where specific Restoration legislation directly led to conflict. Chris ends with some general observations about the constitutional maintenance of the royal supremacy and the containment of the conflicts of the period.

Having summarized this essay, we can analyse it by trying to assess how far it reflects a conception of essays as argument in relation to the three sub-components of the global definition.

Interpretation. Chris clearly takes up a distinctive position or point of view on the essay question. He responds to the first part of the question by identifying five main sources of friction which he categorizes in two groups, and he responds to the second part of the essay question by seeing all five areas as to some extent inherent in the Restoration Settlement, but with the area of religion seen as a special case.

Organization. The essay is underpinned by an explicit interpretive framework, announced in advance as a preliminary to a more detailed examination, and reiterated in the essay's concluding paragraph. The essay thus mirrors a concern with essays as integral wholes. Introduction, main text and conclusion share the same organizing principle, which is founded upon the interpretive position which Chris advances.

Data. Similarly the bulk of the factual references which appear in the essay are aligned to Chris's interpretive framework. References to relevant data are subsumed within each point raised, and thus become the evidence which substantiates each of these points. The opening four paragraphs are the single exception, but since they are described as providing the background to the constitutional arrangements of the Restoration Settlement, their evidential status and their relation to the main concerns of the essay are clearly specified.

# Frank's essay

Frank's essay comprises 33 paragraphs totalling 3700 words. The opening paragraph, shown in Panel 7.3, can be seen as the introduction to the essay: Frank notes the growing friction between sovereign and Parliament on "such crucial matters as the political and religious settlements, foreign policy and the royal finances", and comments that many of these were linked "to the question of the balance of power between King and Parliament".

The paragraphs which succeed it represent an implicit structure which is adhered to throughout the essay. Paragraphs 2–32 follow a clear chronological order beginning with the Convention Parliament in 1660 and ending with the dissolution of the Cavalier Parliament in 1679. The majority of these paragraphs start from or are focused upon one or more Acts of Parliament, Parliamentary measures, Treaties, or Declarations by the Crown, (17 paragraphs in total); or they deal with a series of events

such as those surrounding the impeachments of Charles' First Minister, Clarendon, in 1667 (4 paragraphs) and of Danby in 1678–79 (2 paragraphs). At intervals throughout the essay, a small number of paragraphs (paras 3, 18, 27) set earlier or later paragraphs within a broader context. Paragraph 18, for example, foreshadows the topics of foreign policy, religion and money which are prominent in succeeding paragraphs.

# PANEL 7.3 Frank's essay, opening paragraph

The years of the Cavalier Parliament, which opened in 1661 and was not dissolved until 1679, were marked by increasing points of friction between King Charles II and Parliament on such crucial matters as the political and religious settlements, foreign policy and the royal finances, many of which were related to the question of the balance of power between King and Parliament.

# PANEL 7.4 Frank's essay, concluding paragraph

The years of the Cavalier Parliament saw much friction between Parliament and the King's government in such fundamental and inter-related issues as religion, the political settlement, finance and foreign policy. The result, by 1678, was a strongly Anglican, anti-Catholic religious settlement with a uniform Anglican Church based on the Book of Common Prayer, and the end of religious toleration. A strongly royalist political settlement was initially introduced although this was partly eroded by Parliament's increased use of their power of the purse to control the government's policies, particularly in the raising of armies and hence in war and peace, and their use of statue to scotch the King's tolerant and pro-Catholic policies. The outcome of the Restoration Settlement, therefore, reflects the friction between King and Parliament in these years, particularly over religious toleration and the closely connected Catholic problem.

Panel 7.4 shows the final paragraph. Frank concludes that the period saw "much friction [between King and Parliament] in such fundamental and interrelated issues as religion, the political settlement, finance and foreign policy". He suggests that this resulted in "a strongly Anglican, anti-Catholic religious settlement" and that the initially strongly royalist political settlement became eroded by increasing intervention by Parliament. The outcome of the Restoration Settlement therefore "reflects the friction between King and Parliament in these years", particularly on questions of religion.

Interpretation. There is little to indicate that Frank has taken up the distinctive position or point of view characteristic of a conception of essays as argument. Four areas of friction are suggested in both the introductory and concluding paragraphs of the essay, but these are tagged on each occasion with the phrase "such as" rather than explicitly identified as the main sources of friction. Similarly, the second part of the essay question is only touched upon in the final sentence of the essay. where a connection is posited between one area of friction and the Settlement, but no assessment is made of how far the former was inherent in the latter. In sum, then, the interpretative component seems closest to the incidental thoughts and ideas of a conception of essay-writing as arrangement.

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Organization. There are intermittent references throughout the essay to areas of friction (religious toleration, for example, and foreign policy) but these do not provide a framework underpinning the essay. The structure followed is a chronological one in which specific parliamentary measures or sets of events mark out the route the discussion follows. In sharp contrast to Chris's essay, therefore, the organizing principle adopted is not determined by the essay's interpretative stance. A concern with essays as integrated wholes would not, of course, be invalidated by a chronological sequence if there were also an attempt to relate the chronological account to the focal issue of the main sources of friction and their degree of inherence in the Restoration Settlement. However, Frank's stance towards the focal issue is unclear and the links between introduction, main text and conclusion are not clarified.

Data. For similar reasons, the use of data seems informed by quantitative considerations rather than selected as evidence confirming or refuting an identifiable position or point of view.

# **Conceptions and Approaches**

Amongst this group of seventeen History students, three distinct conceptions of essay-writing were identified. These differences in conception were apparent in how an essay was defined, in the students' essay-writing procedures, and in the content of their essays. The criteria adopted in the interview analysis have been validated by two independent judges<sup>2</sup> and differences in conception have also been found amongst the group of Psychology students who took part in the larger investigation (see, for example, Hounsell, in press).

The differences in conception are reflected in the students' combined coursework essay mark for the History module. Taking only the fourteen students who can be ascribed without qualification to one of the three conceptions, four of the five students with an arrangement conception have marks below 60 per cent, while all four students ascribed to the viewpoint conception have marks in the range 60-64 per cent. Only two students have marks of 65 per cent or more, and both are students assigned to the argument conception. There is no striking relationship with final degree results, but any such link would inevitably be tenuous, since the course module investigated forms only a part of each student's scheme of studies and assessment is strongly weighted towards examination performance. What, then, of the relationships between these and other findings on student learning?

The conceptions which have been identified are of essay-writing as an activity embracing more than a single essay task. As descriptions of students' experience, therefore, they occupy conceptual ground between, on the one hand, the generic conceptions of learning described by Säljö (see Chapters 3 and 5), and on the other, the contrasting conceptions of a specific learning task represented in a deep and surface approach. And as we might in consequence expect, there are conceptual links which span this spectrum of constructs.

Firstly, the most sophisticated conceptions of learning and of essay-writing entail definitions which are made explicit. The students can readily articulate and discuss the activity as they conceive of it. The activity has therefore become an "object of reflection" (Säljö, 1982) which can be appraised and tackled purposively. Secondly, to conceive of essays as arguments is to see oneself as a "maker of meaning". An essay offers a way of understanding or making sense of a problem or issue which is interpretatively distinct, logically coherent, and firmly rooted in the available evidence. In this argument conception, then, as in both a deep approach and a thematic conception of learning, there is a concern to abstract and construct meaning through an active engagement with the subject-matter.

The quest for meaning is also characteristic of a conception of essays as viewpoints, but the holistic focus of a deep approach is here only partly manifested. Ideas are interrelated and integrated but interconnections between interpretation and data tend to be unplumbed or overridden. The completed essay may constitute an ordered argument underpinned by evidence, but has not grown out of a consideration of the range of interpretive options open. This conception also shares the defining features of the multistructural level in the SOLO taxonomy referred to in Chapter 2. At this level, as applied to examples of learning tasks in History, inconsistencies or conflicts encountered in data are ignored or discounted so that a firm conclusion can be reached (Biggs and Collis, 1982, pp. 36 ff.).

Contrasting observations can be made concerning the arrangement conception where the definition of an essay tends to be tacit and implied, and where essay-writing seems to involve passively restating and regurgitating what has been gleaned from source materials rather than attempting to make coherent sense of them. This closely parallels Säljö's first and second conceptions in which learning has an essentially factual and reproductive character and is as Säljö has noted elsewhere, largely "taken-for-granted" (Säljö, 1982, pp. 76-82). Furthermore, in both the arangement conception and a surface approach, the activity is seen unreflectively and mechanically. Material is collected, ideas are advanced, the discussion is given a structure, but these subsist as a collection of discrete procedures which lack a unifying purpose. The meaning of an essay lies less in what it says than in what the completed essay represents: outward stipulations met, a course requirement fulfilled. This constitutes learning as studying but not learning-as-understanding.

# Conceptions and the Study of History

Of the three conceptions identified, it is the conception of essay-writing as argument which is espoused by the School of History. First-year students are advised that "Writing an essay is an exercise in handling historical evidence and building it into a convincing argument", and in our own investigation this same concern was expressed in comments by the tutor on individual essays. How is it that two other conceptions apparently persist, especially when the students are such prolific essay-writers?

In the case of the students who see essay-writing as arrangement, the very frequency with which essays are prepared may help to account for the persistence of the conception. As the earlier discussion of context showed, the History students' opportunities for reflection seem limited: essay-writing is an essentially private activity and the need to "churn the essays out", as one student puts it, leaves little room to dwell on the merits or demerits of any one assignment. The consequences may be especially acute as far as this particular group of students is concerned, for what also distinguishes these students is a perceived gap between their aspirations and what they achieve in their essays, combined with uncertainty about what essay-writing entails. And since the School and the tutor explicitly indicate what is required in a History essay, the uncertainty these students feel cannot evidently be resolved by information-giving, but represents a more fundamental problem. Indeed, there is an echo here of Säljö's analysis in Chapter 5. The students do not share the premisses of their teachers, and so fail to grasp the messages the teachers convey about the nature of essay-writing, as the following comment seems to illustrate:

Interviewer:

What do you think the tutor was looking for in this essay? Sue:

He's obviously looking for a much more sort of, detailed approach, I would say. Although on my last essay he did say that I spent too much time explaining things, and I ought to be arguing and interpreting more, and so I was trying to argue and interpret all the way through this, as well as obviously having to bring in details. And I just wondered if by doing that I haven't tended to generalize a bit. Because when I start to argue and interpret I generalize a little bit.... I think he's looking for argument and interpretation, I just think he's expecting a lot of, uh, more detail perhaps as well.

In the case of the students who see essays as viewpoints, however, the persistence of the conception may be indicative of a more general

orientation to academic studies of the kind discussed in Chapter 10, "The World of the Learner". These students tend to place a premium on originality and to see essay-writing as a medium for self-expression. To Alan, for example, writing an essay can be fulfilling because "It's a work of art. [Ironically]. Your latest album's coming out next week". For these students, interpretation is bound up with their own ideas, thoughts and feelings.

Interpretation is also given pride of place by the students who conceive of essay-writing as argument, but the latter talk not simply of "what I argued" or "my argument" but of "the argument" and of "having an argument". It is as if their interpretive stance has taken on an objective existence: it is no longer "my argument" but something which might be argued by any individual on the basis of the evidence presented. Equally strikingly, this seems linked to a further characteristic of these students, summed up in Graham's comment that learning to put forward a logical argument in an essay is very important because "it's what History's all about". These students seem to share the view of Bennett (1974) that:

"The difference between the scholar's book and the candidate's answer is, in History at any rate, almost entirely one of degree and hardly at all one of kind, for both are products of the same type of thought and both are judged in the same way". (Bennett, 1974, p. 1)

This perspective upon essay-writing can be seen as a way of coming to terms with the tensions between learning and studying and learning and assessment outlined at the beginning of this chapter. Whatever reservations these students may have about their essay workload and its consequences, they see themselves as practitioners, in their essay-writing, of the discipline of History. And perhaps too, in mastering the fundamentals of argument, the students have transcended the discipline; for argument is a universal of academic discourse and the currency of reasoned debate in society at large.

#### Notes

- 1. To maintain confidentiality, all of the students have been given fictitious names.
- 2. Each judge was given a set of coding instructions and a sample of uncoded interview extracts. The level of agreement reached, without consultation, was 84 per cent in both cases.

# CHAPTER EIGHT

# Learning from Problem Solving

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### Introduction

Problem-solving tasks are set as a regular part of the course work on most courses in science, mathematics and technology, and in some social science courses as well. They are seen as an important part of the students' work because they require the application of knowledge and principles to new situations, thus testing and reinforcing the students' real understanding of what they have learned. Knowledge without the ability to apply it is rightly seen as a very poor commodity, and teachers therefore regard problem-solving exercises as an important part of learning.

We can assume, for the purpose of this chapter, that the problems being set for students have a purely educational value; that it is not so much the solution that is of interest, as the process of reaching that solution. We can thus define a problem-solving task as one which 'engages the students in thinking about the subject matter in ways designed to improve their understanding of it'. Problems may sometimes be set to give students practice in some procedure, such as solving quadratic equations, but students learn little from this, other than a facility with the procedure itself. Such problems do not fit into our definition. We are concerned only with problems intended to develop in the students at least a greater familiarity with their subject, and perhaps a better understanding as well.

The teacher faces a difficult challenge in designing problem-solving tasks that fully serve this educational function. Such tasks should help the students to weave the factual knowledge they have into their own conceptual organization, by enabling them to elaborate the relationships between concepts and to impose structure on the information they have. If they do less, then the exercise can easily become a meaningless mechanical manipulation, and loses its real educational potential. Naturally, for many teachers the choice of problem-solving tasks is circumscribed by the traditions of their subject, and there is relatively little creative effort involved in designing such tasks. Even when there is, it is more likely to be for the sake of the elegance of the problem, rather than for its educational value. But the design of problems is important because the cognitive activity inherent in a particular problem-solving task determines the way the student will think about the subject matter. 'Bookwork' problems will encourage bookwork solutions, requiring very

little cognitive effort on the part of the student. A more imaginative problem that challenges the student and invites him to construct new ways of combining information will promote a better understanding. The point is illustrated neatly by Dahlgren's question to economic's students about the cost of a bun (Chapter 2). They were practised at defining the laws of supply and demand, but their lack of basic understanding was revealed by their inability to break out of familiar patterns of thinking to answer a very basic but unusual question.

If we can establish the characteristics of a good problem-solving task we must then ask how successful it is in practice. This brings us back to the main theme of this book. Here we ask "what are students' experiences of

learning from problem-solving?".

In this chapter, we begin by considering how problem-solving has been studied in the past, and how this relates to recent studies of the students' experience of problem-solving. We shall find that students' approaches to problem-solving can be described in terms of the deep and surface approach already introduced in Chapter 3. This categorization is developed further to include a theoretical analysis of the internal relations between the students' learning processes and the nature of the subject matter content. The aim overall is to clarify the nature of learning from problem-solving which may then enable us to use it more efficiently as a teaching method.

# Ways of Approaching an Understanding of Problem-Solving

Human problem-solving has been a continuing concern of psychologists, and they have developed different ways of investigating it. In this section, two well-established approaches are introduced, namely *Gestalt* psychology and Human Information Processing, while the next section develops a critique of them based on empirical studies using qualitative methods.

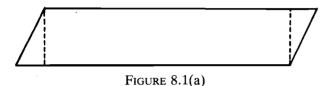
There are important differences between these two theoretical analyses of problem-solving. Gestalt psychology describes human cognition in terms of the quality of our perception and thinking, while information processing theory categorizes the *mechanism* of our perception and thinking. Not surprisingly, therefore, the two types of theory produce very different descriptions of problem-solving.

# Gestalt Theory and Problem-Solving

The essence of Gestalt psychology is to emphasize the structural quality of the way in which we perceive, think about, and feel, the world around us. This structural quality is wholeness ('Gestalt' means 'whole'). In order to see something, we focus on some part of it—like a word on a page. We select a part from a whole. In focusing on the foreground or 'figure' we thereby create a background or 'ground'. The essence of our perception is that each part exists by virtue of its relation to a whole, and can itself be seen as a whole. By emphasizing this structural quality of human cognition, the Gestalt psychologists make the assumption that

there is always some underlying structure within our perception of a situation, or experience, or task. They also regard relationships between parts and wholes within that structure as constituting the forces that drive our productive thinking.

Wertheimer (1959) applied these ideas to exercises in elementary geometry. In going through these examples we can see why the Gestalt theory can be useful in understanding problem-solving. It suggests, for example, that the best way of discovering how to find the area of a parallelogram is *not* by being taught a rule or algorithm, but by finding the underlying structure of the problem, and thereby solving the problem in a meaningful way. The reasoning process might run as follows: the parallelogram is essentially a rectangle in the middle, plus two extra triangles:



We know how to find the area of a rectangle, so the area of the middle part is known. We are left with the two triangular parts. They are not rectangles, but by rearranging the diagram they do fit together:

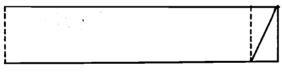


FIGURE 8.1(b)

and that makes one large rectangle with the same area as the parallelogram. Hence the problem is solved. Wertheimer (1959) describes this kind of process as follows (my parentheses):

When one grasps a problem situation, its structural features and the requirements set up certain strains, stresses, tensions in the thinker. What happens in real thinking is that these strains and stresses (e.g. what to do about the triangular parts) are followed, yield vectors in the direction of improvement of the situation (i.e. they fit together to make a rectangle which it is easy to find the area of), and change it accordingly (i.e. draw the reconstruction) . . . (The solution) is a state of affairs that is held together by inner forces as a good structure in which there is harmony in the mutual requirements (i.e. the reconstruction is equivalent in area to the original, but also allows us to calculate the area) and in which the parts are determined by the structure of the whole, as the whole is by the parts. (p. 239).

What Wertheimer has done here is to explain the process by which we

can solve a problem, not in terms of a procedure, or a series of steps, or even a strategy, but in terms of the way in which we perceive the whole problem situation. The forces that drive our thinking along the steps to the solution are created by our perception of the structured requirements, in other words what the 'givens' of the problem need to become the solution.

Such an account of problem-solving emphasizes the importance of the meaning of the problem for the student. When we draw on Gestalt theory to think about problem-solving, it is inconceivable to think of teaching children to solve problems by some rote method.

There are two main difficulties in applying Gestalt theory to the kinds of learning and problem-solving that occurs in the classroom. One is that the problems researched are of a particular character—geometric, algebraic, mathematical. It is not clear how far the theory can help us with different kinds of problems, (e.g. experimental situations or engineering problems) which have very different structural characteristics from those often discussed in the literature. The second problem is that the focus is always on the *problem* and the student's perception of it. But from the student's point of view, the problem situation is not just the content of the problem as given but includes also the *context* in which it is given. Wertheimer himself makes the same point in his introduction to *Productive Thinking*:

The nature of the topics discussed permits us to deal with thought in terms of "relatively closed systems", as though thinking about a problem were a process that occurred independently of larger issues. Only occasionally shall we refer to the place, role and function of such a process within the personality structure of the subject and within the structure of his social field. (p. 12).

Again, in the conclusion, he describes the problem-solving process as:

... a partial field within the general process of knowledge and insight, with the context of a broad historical development, within the social situation, and also within the subject's personal life. (p. 240)

We can imagine this broader context by considering the problem from the student's viewpoint. Does he just have to find the area of the parallelogram, or does he also have to do it in the way the teacher wants. If so, he may wonder whether or not he could get away with doing it his own way, or even consider the consequences of not doing it at all. It is a far more complex 'problem' than we might at first suppose, and all these issues have some kind of bearing on what precisely the student does with the content of the given problem, as we shall see later in the chapter.

# **Human Information Processing and Problem-Solving**

The Gestalt account of problem-solving tells us that the structural quality of our perception assists the solution process, and when we fail to solve problems, this amounts to a failure to perceive the structure of the

problem situation. By contrast, the information processing approach focuses on the *mechanism* of the problem-solving process. Both approaches begin by looking at the ways in which people go through a problem-solving process, but they do it in different theoretical contexts. and so focus on different aspects of the situation. Information processing looks at the various procedures that people adopt, and integrates these into a more deterministic account of how humans solve problems. It is characteristic of this type of account that it should be capable of being simulated by a computer program, where the simulation "aims at the representation of a psychological theory of problem-solving" (Boden, 1978, p. 143). The theory provides the psychological processes involved in problem-solving, and the theorist then has to program the computer with functionally equivalent processes, for example, search for a match to a 'given' from a set of alternatives. The resulting program represents the theoretical description of problem-solving. In principle, of course, it is not necessary that such a program be written—the theory does not stand or fall by the fact that the computer solves the problem or not, but by whether it is possible to write such a program. If an information processing account is sufficient to describe human problem-solving, then in principle it should be possible to program a computer to perform the same procedures. The value of the attempted simulation is that it highlights the gaps between theory and practice.

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This kind of approach is characterized well by the work of Newell and Simon who developed a program called General Problem Solver. They derived a psychological theory of human problem-solving from an analysis of protocols of people attempting to solve problems such as the following:

Given that each letter represents a number from 0 to 9, and that D is 5, find the values of the other letters in the sum

DONALD + GERALD = ROBERT

(Newell and Simon, 1972)

The theory was based on the idea that human cognition is dominated by heuristic processes. Their analysis of protocols revealed what these were and they could be represented in a computer program capable of solving the same problem in a similar way. Failures to solve problems can then be seen as failures either to apply the correct heuristic, or to use one at all.

The principal characteristics of the heuristic approach can be described in information processing terms such as 'means-end analysis', creation of sub-goals', 'working forwards' from what is given, 'working backwards' from the intended goal. For the problem above, the means-end analysis will tell you that in order to get from the given to the goal, you need to break the problem into individual algebraic sums, and use what you know about the rules of addition, together with the given information, to deduce the various values. The creation of sub-goals then follows, in the form of considering individual columns. The solution may then proceed by 'working forwards' from what is given, e.g. D + D = 5 + 5 = 10,

therefore T=0. Another 'working forwards' strategy is to generate the possible numbers a letter might be, e.g. L+L+1=R, L+L is even  $\therefore$  R is odd, L is not zero  $(T=0) \therefore R$  is not 1, D is 5,  $\therefore R$  can be 3, 7 or 9. A 'working backwards' strategy might be to consider what would happen if a particular letter is some particular number, e.g. suppose R=3: looking at the last column, 5+ something =3, which is impossible,  $\therefore R$  is not 3. From protocols such as this, we can develop a series of heuristics for the computer to work by: assemble known information; for each column, generate the possible equations; for each equation, generate the possible values for each letter; for each value deduced, check that it is not already occupied by another letter, and so on. The program developed from these steps will then represent the theory that humans use these heuristic procedures in solving such a problem.

The general heuristic procedures, such as means-end analysis, creating sub-goals, or working forwards and backwards can be applied to any problem. Thus the General Problem-Solver uses these heuristics, together with an appropriate representation of the problem, to generate the specific heuristics for that problem, such as those in the above paragraph. This, the theory states, is what a human being will do when confronted with a new problem, i.e. use general heuristic procedures, together with an appropriate representation of the problem, to generate a specific solution. The value of the theory lies in its description of the heuristic procedures we use in problem solving, because if these can be made explicit for students then there is some possibility that they can be assisted in learning how to solve problems.

One of the greatest theoretical difficulties with the information processing approach is that it begs the very important question of what is an appropriate representation of the problem. Some of the research in the field of Artificial Intelligence has attempted to answer this by analysing the underlying structure of the problem, and looking at how this relates to the solution strategies students adopt. There is no suggestion that the student is aware of the underlying structure. Yet research shows that the characteristics of solution protocols differ according to the structure of the problem (Luger, 1975), and so the problem-solving strategies students adopt are determined, in part, by the form of the problem. But this non-conscious problem-solving does not help the information processing theorist who needs to know how a problem-solver represents the structure to himself, which may not be at all equivalent to the expert's analysis.

This is the very question that Gestalt theorists tackled: it is precisely the perception of the underlying structure of the problem that the information processing theorists need as their starting point. Similarly, the information processing account tackles the question of how you proceed through a problem, once you have had the insight, a question which the Gestalt theorists paid less attention to.

Thus these two very different theoretical frameworks have similar empirical procedures—in that both analyse approaches to problem-solving—and produce complementary findings. We might expect that we

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could combine the two to give a complete picture of how students solve problems. The question now is: how far does the theory apply to the practice of problem-solving in higher education?

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#### The Application of Theory in Practice

To achieve an understanding of the students' experience of learning through any medium, it is necessary to develop rather different methodological procedures from those described in the previous section. We are no longer concerned with the general processes of human psychology, but with the personal reality experienced by students as they learn. In order to understand learning from the learner's perspective, we need to use investigative methods that are capable of probing the students' learning experiences, and of eliciting data that will give us some insight into the full complexity of the learning process as practised by students.

A recent study on how students learn from problem-solving was carried out with a small group of 12 university students studying the second year of a combined science course (Laurillard, 1979a). The aim of the study was to investigate how students approach and carry out problem-solving tasks set as part of their coursework. The course chosen was a course on micro-electronics, and the study focused on three of the problems set. For each problem, the student was asked to complete a short open-ended questionnaire, including such questions as 'how did you start the exercise?', 'were there any points you found difficult — what did you do about that?' and so on. Questionnaires were completed soon after the problem task had been finished so that students were able to remember what they did in some detail.

The questionnaire data were analysed by searching for students' descriptions of the kinds of heuristic activities defined by Newell and Simon. Several such heuristic devices were apparent, but they did not operate in quite the way we might have expected.

Data of this kind necessarily give us a different perspective on the process of learning. They cannot tell us what cognitive processes are involved and how they operate, but instead they can tell us, for example, how the student perceives the given problem-solving task. Consider these quotes from students, explaining their initial approach to a problem which involved writing a device control program for a given microprocessor. The quotes record the important first step of making sure they understand the problem.

I read through the question to see what was familiar from the lecture, i.e. phrases or specific words that were repeated.

I have to sort through the wording very slowly to understand what he wants us to do.

I read through with reference to the class notes making sure I understand the sequence.

First I thought: the drawn circuit was incorrect: experimented with the current version (in the) notes.

The students' descriptions of their initial approach to the problem vary in the degree of activity involved; the first one is clearly taking a 'surface' approach' (as described in Chapter 3), and the last is active to the point of being critical of the question. But what is common to all these students is the focus of their attention, not on the problem itself, but on the problem as set by a teacher in the context of a particular course. We might expect that the first stages in solving such a problem would be to consider what kind of microprocessor it is, what kinds of control would be needed. which instructions are relevant etc. But the students' attention is focused not on the program to be written, but rather on what they think the teacher requires. The domain of the students' problem is not the world of microprocessors but the world of the teacher setting this question. Each student, in different ways, relates the problem to its educational context: the lecture, the lecturer, the lecture notes.

The same tendency can be found in students descriptions of how they carry out the problem task; again, they may be working not on the pure content of the problem in isolation, but on the problem in context:

I thought of a diagram drawn in a lecture and immediately referred back to it. Then I decided which components were wanted and which were not and started to draw it out, more or less copying without really thinking.

I just looked back at the class example and tried to think of how it was similar and how it differed and where I would fit in the new stages of 'initialization' and 'recovery'.

I decided since X was setting the question, block diagrams were needed.

Each step, and each strategic decision made, refer to the immediate context of the problem as it occurs in that course. The criterion is not "is that what this type of microcomputer needs?", but "is this what this teacher is looking for?". For these students, the problem situation is quite different from those featured in experimental studies. The problem is not an isolated event; it comes after a certain lecture, and is likely to relate to it. It will also be marked by a particular lecturer, and the solution should take that into account as well.

The final stage of any problem-solving process involves checking back and examining the solution. And again, some students evaluate their solution not within the terms of the problem alone, but in relation to other aspects of its context, such as their own level of commitment to the task.

I don't think the finished product was right, but I decided it would do.

I drew what I thought seemed logical although [I] was not

satisfied as I couldn't really see how it fitted in . . . I didn't really do this exercise with a view to getting anything out of it. I felt it was something to copy down and nothing to understand really.

I went back to re-check again the answer, not only to make sure that it was correct but to make sure that I had understood what I had written.

These illustrative quotes show that it is possible for the student to be so concerned to solve the problem in its educational context that they pay little attention to the problem itself or its inherent subject matter content. Teachers should always be aware that the student's perception of a problem is likely to be different from their own in this respect, and that this difference may have an undesirable effect on the problem-solving heuristics the students adopt. These heuristics, as illustrated above, are perfectly reasonable and reflect the rational procedures outlined by the information processing theorists, but if the content of the students' problem is this curious 'problem-in-context', then the content of their heuristic thinking will have less to do with microelectronics or whatever the subject matter is, and more to do with the requirements of their course. So the problem-solving task may fail to ensure that the student learns about the subject matter. They do learn something about the 'problem-in-context', but that includes knowing about how to get good coursework marks, about reading between the lines, about interpreting the lecturer's behaviour, and so on. This will no doubt be of some value to them, but it will not satisfy the teacher who intends them to learn about microelectronics. This is a serious difficulty in making sure that a problem-solving task evokes successful learning.

We have seen that students pay considerable attention to peripheral aspects of the problem, but students do also have to consider the problem itself. In the next section, we consider alternative ways of approaching a problem-solving task and attempt to determine the origins and consequences of these.

# Students' Approaches to Problem-Solving

A more wide-ranging study of students' problem-solving activities was carried out on a group of 31 university students studying a range of science and engineering courses (Laurillard, 1978). The primary aim of this study was to find out how far existing descriptions of the learning process, such as the deep/surface approach, were applicable to students taking these courses. Each student was interviewed on at least three occasions about a coursework problem task they had been set. The interview lasted one hour and included three stages:

Teachback\*

— the student 'teaches' the problem situation to the interviewer, who interposes no substantive questions.

Stimulated recall

—the students are interviewed about how they worked on the task in detail, using the problem statement and their written work to stimulate recall.

Questions on context — the students are interviewed about why they did what they did, relating this activity to other aspects of the learning context such as the relevant lecture, tutorial, assessment etc.

Transcripts of the interviews were analysed by searching for descriptions of, for example, a deep or surface level approach, and their interpretations were then independently checked by two other judges. Such data are rich not only in confirmation of the existing descriptions of learning, but also in insights into how the students experience these particular learning tasks.

In Chapter 3 the students' approaches to reading were discussed in terms of the deep and surface approach, and it was demonstrated that the two forms of activity led to different learning outcomes for the students. It was also indicated there that these descriptions of the learning process do not apply only to reading. And here we find similar activities in students' approaches to problem-solving. The deep approach is active, with students looking for the meaning of what they are doing. The following quotes are taken from interview protocols of students describing their approach to various coursework problems in science and engineering. Each one illustrates the student's concern to focus on the meaning of the problem:

What I'm trying to do is picture what's going on and see the model they're using.

I was trying to work out what's happening to this point moving on a surface.

First I read the introduction to see what they had to say about it, why it gives a reasonable approximation and what it neglects, because you have to realize the limitations of the method.

Looking at the system, I was thinking of what is actually happening, relating numbers to features.

It is therefore possible to show that there are circumstances in which student's attention is focused fully on the subject matter content of the problem, and thus that the 'deep approach' describes one aspect of how students learn from problem-solving. Similarly, the alternative 'surface approach' can also be found. This is more passive, with the student content to treat the elements of the task in a purely mechanical way, not considering their meaning, merely their form:

I didn't really look at my notes because you don't have to actually look at the system, you don't have to interpret it in terms of its application.

<sup>\*</sup> Adapted from Pask's 'teachback' (see p. 139).

I just copy from last year's notes . . .

You can't really go wrong, it's all done on the diagrams for you, you can go through without thinking at all.

The key to the deep/surface dichotomy, as found in reading tasks, is the focus of the student's attention; whether it is the meaning behind the words, or the words themselves. In applying the dichotomy to problem-solving tasks, we find an exact parallel, with students focusing either on the meaning, or on the words, numbers and diagrams themselves. The deep and surface approaches to learning can therefore be seen as characterizing a fundamental aspect of how students learn, applicable in different types of learning task.

The origin of a student's approach to a particular problem is not apparent from their descriptions of how they work it out, but the interview questions about their perception of the educational context within which they are doing it, indicate that the approach derives from their intention — why they are doing it and what they expect to get out of it. Students who describe a deep approach in carrying out the tasks, respond to those questions with descriptions such as the following:

I want to understand the theory of what I'm doing to do a good write-up and get the results.

I have to use this for my project. I want to do as much of the steps as I can, to understand what's going on.

These quotes illustrate the students' intention to understand the meaning. In contrast, the surface approach derives from an intention merely to memorize or to reproduce:

These are general notes. It's an easy way of putting down principles so you can revise it.

I tend to write down certain things I rely on myself remembering for the next year or two... you can remember it that way.

If the origin of the approach is the student's intention, then as the student may have different intentions within different learning situations, then the same student may use either approach, on different occasions. In this study 19 out of the 31 students exhibited both types of approach (Laurillard, 1979b). The internal consistency between intention and approach is illustrated by the following quotes from the same student talking about two different learning tasks:

# Deep Approach

This has to be handed in — it's an operation research exercise, a program to find a minimum point on a curve. First I had to decide on the criteria of how to approach it, then drew a flow diagram, and checked through each stage. You have to think about it and

understand it first. I used my knowledge of O.R. design of starting with one point, testing it and judging the next move. I try to work through logically. Putting in diagrams helps you think clearly and follow through step by step. I chose this problem because it was more applied, more realistic. You can learn how to go about O.R. You get an idea of the different types of problem that exist from reading.

#### Surface Approach

This problem is not to be handed in, but it will be discussed in the lecture because the rest of the course depends on this kind of thing. I knew how I'd do it from looking at it; it practically tells you what equation to use. You just have to bash the numbers out. I knew how to do it before I started so I didn't get anything out of it. There's not really any thinking. You just need to know what you need to solve the problem. I read through the relevant notes, but not much because you don't need to look at the system. It's really just a case of knowing what's in the notes and choosing which block of notes to use. You don't have to interpret it in terms of the system. It's only when things go wrong, you have to think about it then. In this sort of situation you've got to get through to the answer.

Thus the deep/surface dichotomy does not characterize a stable characteristic of the student, but rather describes a relation between the student's perception of a task and his approach to it. The student's perception of a learning task encompasses a mulititude of things: it depends on its form and content, on its relation to other tasks, on the student's previous experience, on the student's perception of the teacher who marked it and of how it will be assessed. But the operational outcome of this combination of judgements and perceptions is an intention either to understand or to memorize, and thereby to use either a deep or surface approach.

Thus the referential character of the deep/surface dichotomy—its description of what the student attends to—has been shown to be relevant to how students learn from problem-solving. The dichotomy has implications, however, for the way the student engages with the subject matter, and this is of crucial importance in problem-solving. This relational aspect of the dichotomy was described in Chapters 3 and 4 in terms of the distinction between 'holistic' and 'atomistic'. The terms define students' activities in carrying out the task. As we saw the 'holistic' approach involves students in attempts to "search for the author's intention, to relate the message to a wider context and/or to identify the main parts of the author's argument and supporting facts" (Svensson, 1977). The 'atomistic' approach involves students in "focusing on specific comparisons, focusing on the parts of a text in a sequence (rather than the more important parts), memorizing details and direct information

indicating a lack of orientation towards the message as a whole" (Ibid.) The holistic/atomistic dichotomy focuses on the way students manipulate the structure of the text they are reading, and thus makes clear how the differences in outcome arise: the difference in approach constitutes a difference in outcome by virtue of the fact that the students are interacting with the subject matter in a different way.

The holistic/atomistic dichotomy is again mirrored in students' descriptions of their approach to problem-solving tasks. The parallel to the holistic approach is manifested when students describe ways of dealing with the problem content that preserve the structure and meaning of each part and its relation to the whole.

I started by (deciding) what I needed to prove. I tried to set up in my mind how I was going to do it.

You do it by putting things in boxes, forget what's inside them and look at the whole picture.

You're told so much, you need to find some kind of relationship.

Contrast these statements with those that illustrate an 'atomistic' approach which ignores the structure of the problem and concentrates on cobbling together a solution by manipulating the elements rather than understanding the whole.

First you have to isolate what one knows, or what facts are known. Then consider what expressions to use.

I started by writing down equations, but you should start by thinking of what you need.

I looked up the formulae and made calculations from those.

The essential difference between a holistic and atomistic approach is that whereas the former preserves the underlying structure of the subject matter content, the latter effectively distorts it, because the students pay no attention to the structure and concentrate only on juggling the elements together until they fashion a solution.

This structural aspect of approaches to problem-solving, which the holistic/atomistic dichotomy emphasizes, is crucially important. The whole point of problem-solving as a learning task is that it should engage the students actively in thinking about the subject matter, and in operating on the relations within it, so that personal meaning can be created. The evidence from these interviews demonstrates that the two alternative approaches to problem-solving do exist, and clearly one is desirable and the other less so, at least if students are to be effective problem-solvers outside the narrow educational context. But we need a full understanding of how deep and holist approaches lead to a higher level of learning outcome if we are to make use of this finding in designing problem-solving tasks. What does it mean for a student to understand a topic, and how do different approaches to learning relate to

understanding? The next section introduces a theoretical analysis of these questions from which we can derive a further way of describing how students learn from problem-solving.

#### Problem-Solving Tasks and their Relation to Understanding

The studies reported in this book deal mainly with studies of the learning process as seen from the student's point of view. The power of this type of research is that it allows us to investigate a process that is essentially internal by obtaining students' descriptions of their experiences of learning. Such descriptions refer to the structural aspect of human cognition, identified by the Gestalt psychologists, but they are elaborated in relation to the particular context of higher education. Thus we find, for example, that structure can exist in both holistic and atomistic forms.

The problem of investigating the internal process of learning was solved in a different way by Gordon Pask and his colleagues (see Pask; 1975). They attempted to 'externalize' the process by creating an external manifestation of its most important features. One of the techniques adopted was to arrange the factual and descriptive information about a subject on a series of cards, each one labelled with a description of its content. Putting the information together would enable students to work out underlying principles (for example, of biological classification). Students were required to work out those principles (i.e. they had to demonstrate understanding) by selecting and reading the cards in any order they chose. The organization of the subject was essentially hierarchical, but students could work in any way they liked, for example, from general points to specific ones, or vice versa, or across the topics. Pask found two contrasting strategies; for one, students built up the complete framework by beginning with general descriptions and filling in details later. For the other, they built up the framework step by step from the details to the more general principles. The two strategies achieved equivalent outcomes because that was required by the task. Thus there appeared to be two distinct strategies, ultimately equivalent in outcome, but very different in process.

This methodology is fundamentally different from that used by Svensson and Marton. They, like the Gestalt psychologists, make the students' perceptions of the structure of the material the focus of their investigation. Pask, like the information processing theorists, takes the structure of the material as given, and investigates what students do with that information, or how they process it.

The result of Pask's investigation is interesting, but not immediately applicable to normal teaching-learning situations because the learning task was so artificial. However, in parallel with this experimental work, Pask also developed a theoretical framework, which allows us to interpret his findings and apply them to more familiar learning tasks.

Pask developed Conservation Theory as a way of describing the logical structure of what an individual (person or even machine) must be to be able to learn, and what the nature of the relation is between this

individual and the subject matter to be learned. One basic principle of the theory is that in order to be able to learn something, an individual must know what it knows—must be able to tell itself what it knows, hence 'Conversation' theory. The second basic principle is that the individual must come to know a subject domain, must operate on it (manipulate its elements according to some plan or procedure) and must obtain feedback on the result of these operations. Finally, the third basic principle is that in order for these operations to form a systematic well-organized investigation of the subject-matter domain, they must be generated from a global theoretical framework through a set of operations and procedures which also receives feedback on the results of its operations. An obvious parallel is global theory generating localized experiments in scientific method—the prototypical way of learning about a domain. These basic elements of Conversation Theory (see Pask; 1975, for a fuller description) can be combined and represented as the diagram in Figure 8.2.

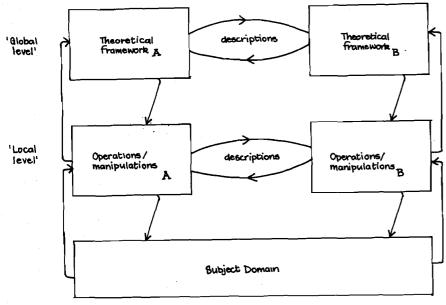


FIGURE 8.2
Schematic representation of Conversation Theory (based on Pask, 1975).

The symmetry of the diagram represents the internal 'conversation' that constitutes learning. The two theoretical frameworks we may call A and B, may be different from each other, but must be operationally equivalent. For example, the first may define a circle as a polygon with an infinite number of sides; the other may define it as a line whose locus maintains a constant distance from a fixed point. When both are used to generate an output through the manipulation of lines and points, they will both generate circles. The 'descriptions' then refer to the way students

make the content meaningful to themselves. Having constructed the meaning (e.g. a description of theoretical framework A) it is then possible to use it to construct B, an alternative but compatible framework. That alternative must then be tested by generating corresponding operations on the subject matter domain and checking that they produce the same results as the previous framework. The vertical pathways in the diagram may also be used to construct frameworks, as in scientific method. The three levels in the diagram indicate different aspects of the subject matter. First there is the global theoretical framework—the structured elements and their relation to each other and to the whole; then the localized manipulative procedures - the specifics, isolated details unrelated to the whole; and finally the domain itself—the external representation of the subject. As an example, take Pythagoras' theorem as the theoretical framework, techniques such as constructing a square on a line as the manipulative procedure, and geometric triangles as the domain.

From this purely theoretical account, Pask derived two styles of learning, both of which are necessary for understanding, i.e. the proper development of the theoretical framework. 'Operation learning' refers to the vertical pathways: the construction of hypotheses, the use of rules, techniques, procedures, the manipulation of entities in the subject matter domain. 'Comprehension learning' refers to the horizontal pathways: the description of the construction at both levels, global and local, the interpretation of their meaning, the search for analogies with other similar constructions.

These are theoretical descriptions of learning, but they may nonetheless be applicable to the reality of student learning. In the research study already described (Laurillard, 1978), the students' work on their coursework assignments was also used to investigate the applicability of operation and comprehension learning in this kind of learning situation. Ten of the students were interviewed about three of their assignments, each one a problem-solving task—in chemistry (reaction kinetics), crystallography (stereographic projection) and metallurgy (equilibrium diagrams). The students were interviewed individually, and at the start of the session they were asked to do a 'teachback' (Pask's term), i.e. to teach back to the researcher what they had learned about the subject matter of the problem-solving task. Each teachback lasted 5-10 minutes and was recorded and transcribed for later analysis. The analysis was done by inspection, looking for examples of statements that described either operation learning (statements of rules or procedures) or comprehension learning (descriptions of concepts or interpretation of operational constructions). The analysis was checked by two judges who achieved an average of 82 per cent agreement in assigning these categories.

Given this form of analysis, the presence of operation and comprehension learning within students' normal academic work can be demonstrated by selecting quotes from protocols which have been classified according to the two styles. The following quotes, where each student is describing

how to work out a problem on an equilibrium diagram,\* illustrate how they employ the lower, localized level of operation learning in the form of standard techniques in working out the solution.

If we're at a certain point, we can find out the proportions of the length of the line.

You work from this side of the graph, you get 12.5%A; as temperature is raised, solubility is increased.

Now, bring in that rule, anything between those two single phases, you've got a double phase, so that's a double phase.

Now then, you've got a straight line. Now then, another rule is that if you've got a straight line . . . that is a compound.

These students are clearly using operations—procedures and rules—but they are not operating at the level of the theoretical framework of equilibrium diagrams. The focus of their attention is on isolated details of the subject matter, and operations are carried out on the basis of selection from a standard repertory of techniques rather than by recourse to theory. Similarly, we can find evidence of comprehension learning at the lower level, where descriptions of concepts are local, and there is no attempt to integrate concepts or establish relations between them.<sup>1</sup>

This is eutectoid reaction here. This is your  $\alpha$  phase. This is a two-phase region, which is a mixture of the  $\alpha$  and carbon compound.

 $\dots$  this line  $\dots$  is called the liquidus, and by liquidus, it means everything above it is liquid.

If you've got pure iron and you elevate its temperature you get structured changes with increasing temperature, at 90° you start off with the first structure you call  $\alpha$ .

These students are focusing on the meaning or interpretation of the diagrammatic representation, but they are not descriptions of a theoretical framework, rather they are descriptions of its detail in isolation. Quotes of this sort indicate the presence of comprehension learning, but only at the lower, localized level. Evidence of learning at the more theoretical level can be found but in this study it was rare. One such example is still a description of structural changes, but here the meaning of the diagram is related to the theoretical concept of the crystal pattern. It is thus not simply a description of the existence of the phases as areas on the diagram, it places that interpretation in its theoretical context.

In some types of material, a lot of them when they freeze, metals that is, you get two distinct crystal patterns. In a particular metal, you could end up with one phase with dendrites in it... they're two completely different phases and so, because a lot of metals aren't completely soluble when they start to freeze, you get these two phases out.

This student is offering an explanation of the theory to support his identification of the two phases of the diagram, and this is a form of high level comprehension learning, i.e. the student is building descriptions of the theoretical framework underlying the problem.

Thirty such protocols were analysed in this way. All students were found to use both styles of learning, but in varying proportions and, more strikingly, in varying proportions depending on the task. For example, on the stereographic projection task, all the students showed a high incidence of operation learning, whereas on the Equilibrium Diagram task, only half the students did so, with half biased more towards comprehension learning. This unequal distribution of styles among different problem-solving tasks is strongly indicative of a task effect on choice of learning style, and this will be discussed further in the next section.

This research had thus demonstrated that the theoretical constructs of operation learning and comprehension learning also help to describe problem-solving tasks in everyday studying. An obvious question is, how are these constructs related to the descriptions of 'approaches to learning' we have already encountered?

We can begin to make sense of the relations between these constructs if we consider again their definitions. Operation learning concerns the manipulation of the concepts and objects in the subject matter domain. Comprehension learning concerns their meaning, or description. The global level involves integration of the descriptions into a theoretical framework: the local level does not. The descriptions of deep/holistic or surface/atomistic approaches do not involve a separation into procedures and descriptions. Thus the only parallel that can be drawn between the two sets of categories would suggest at least a tentative correspondence between deep/holistic approaches and both comprehension and operation learning at the global level, and between surface/atomistic approaches and both comprehension and operation learning at the local level.

If we consider approach, with its intentional component, as a preliminary to style, it is then possible to suggest that the choice of approach affords the opportunity for one or other level of style to be implemented. For any particular problem, a student who is thinking deeply and holistically will be looking for meaning and will be able to attend to the global level of descriptions, whereas the student who is thinking atomistically will consider only the local components of the problem without seeking to integrate them meaningfully. The effects of a surface approach, insofar as it involves the intention to reproduce, will be to produce low-level descriptions or unintegrated sets of operations.

<sup>\*</sup> An equilibrium diagram represents the structural phases that metal alloys go through as they cool. The students were asked to work out the sequence of phases for particular alloys using the diagram. This involves them also in interpreting shapes and sections of the graph.

We can see, therefore, that the student's choice of approach and style is dependent to some extent on the nature of the problem-solving task itself. and also on how the requirements are perceived. Both of these influences are in the control of the teacher. If teachers wish the tasks set to be effective in improving students' understanding of the subject, if they are meant to be more than purely mechanical exercises in rehearsing some standard procedures, then the design of those tasks is crucial. They must be complex enough to demand hypothesis-testing or explanations of theory. The design process must take into account the various descriptions of learning we have discussed, and ensure that the problem requires the student to engage in the appropriate kind of thinking. It must also be considered in relation to assessment procedures and the whole educational context, as we shall see in the next chapter. After that, the responsibility for learning lies with the student.

Students take a largely rational approach to learning. They consider what is required of them, they decide on priorities, and they act accordingly. The teacher plays an important part in forming their perceptions of what is required and what is important, and it is this, as much as their style of presenting the subject-matter, which influences what and how their students learn.

#### Note

1. I am grateful to Dr. J. Howe of the University of Edinburgh for pointing out that definitions of this sort should be classified as comprehension learning because they are essentially descriptions. I had originally classified them as operation learning on the grounds that they are a form of rule, but I now think this makes less sense.

A deep approach may go through the initial stages of low-level operation learning, but only as a preliminary to the high-level integration of descriptions and operations into a full understanding of the subject-matter domain.

What Pask's theory tells us is that for any problem, there are global and localized forms of description of its domain, and the student has to be able both to manipulate the concepts and the relations between them and to interpret the meaning of those manipulations. What Svensson and Marton tell us is that the global forms of description will not be considered by those students who take a surface/atomist approach, and they will achieve a full understanding of the problem only if they take a deep/holist approach:

It has been possible to show that the two forms of descriptions of learning, the one derived empirically, the other theoretically, are applicable to a wide range of normal academic tasks, and are compatible with each other. These descriptions give us a way of simplifying the complexity of students' experiences of learning from problem-solving so that the task of trying to understand how students deal with this form of learning becomes more manageable. But how does this help us to use problem-solving more effectively as a form of learning?

#### **Implications for Teachers**

The student's choice of operation or comprehension learning may depend as much on the nature of the task as on the student's own personal characteristics. Some tasks necessitate operation learning e.g. the stereographic projection problem required students to do considerable manipulation of mathematical objects, but did not require them to do any interpretation of the objects or the manipulations. Similarly, the Equilibrium Diagram task required students to interpret a diagram to give an account of what was happening to a cooling metal alloy, and this required some manipulation of objects and concepts as well. The empirical results confirmed that the requirements of the task, in each case, matched the predominant style of learning exhibited in students' protocols (Laurillard, 1979b).

The choice of learning style has also been related to the student's intention, as characterized by his approach to the task. But we must take care with the deductions we make here, because the categories of 'approach' have been derived from a reading task. There is an important difference between the two: a reading task does not itself make demands on the student — the text is there to be read as the student chooses, with some purpose in mind certainly, but the text itself does not state the purpose. A problem-solving task, on the other hand, explicitly requires the student to solve it. As in reading tasks, the student may approach the task with an intention to learn meaningfully or superficially and may choose how he carries it out, but the crucial point about a problemsolving task is that it may itself make very minimal demands. For many such tasks, there is a standard procedure which students are wise to

# CHAPTER NINE

# The Context of Learning

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#### Introduction

Previous chapters have already indicated ways in which the educational context is bound up with students' approaches to learning. The framework of institution, department and courses, affects students' perceptions of reading, listening to lectures, writing essays and solving problems. Students do not, for example, simply read an article. They read it for a purpose connected with a course of study and in response to the requirements of those who teach the course. It is a central theme of this book that a student's perception of the learning context is an integral part of his or her experience of learning.

The special concern of this chapter is with how students' perceptions of teaching, assessment, and course content and structure within the natural setting of academic departments may influence how students learn. The focus is thus not on the framework of courses and assessment itself, but rather on what the students construct out of this framework. How do students experience the effects of the context of learning at university? The following three extracts from research interviews illustrate some of the pervasive influences of teaching and assessment on students' attitudes towards studying and on their approaches to learning.

I certainly don't like it if you get tutorials where the guy just comes along and sits down and makes you stand up and do the work on the blackboard. Usually he picks on people that can't do it, which I think is terrible because you get stuck up at the blackboard and made to look a fool, and it switches you right off... I think I'm not going to do that if this guy's going to do that to me, because I don't learn anything; nobody else learns anything because it takes you so long to do the question; and it makes you very unhappy with that particular course, so I lose interest in the course. (Student taking Physics)

I hate to say it, but what you've got to do is have a list of the "facts"; you write down ten important points and memorize those, then you'll do all right in the test . . . . If you can give a bit of factual information — so and so did that, and concluded that — for two sides of writing, then you'll get a good mark. (Psychology)

Recently we were doing Fourier analysis, and the lecturer mentioned in passing that it was something which they used when they transmit moon pictures back to earth...that makes a lot of difference, you can see it being used... Another example he quoted was about why when you bang a drum you get lots of different sounds rather than when you say, play a violin you just get the one note...he said, if you look at this you can see why—and he was right, you could see why; it did make sense. (Physics)

At first these perceived effects may seem commonplace enough, and yet it is very important that we do not exclude them on that account. We saw in the first chapter how general principles of learning derived from controlled experiments — experiments which, by definition, exclude the sort of "background noise" illustrated in the examples given above — have often failed to help students and teachers to deal with the everyday problems they face. In contrast, this chapter will argue that recent research looking at students' own descriptions of their experiences of the learning context has crucial implications for improving the quality of teaching and learning in higher education.

#### **Effects of the Learning Context in Historical Perspective**

There is nothing new about the idea that learning in educational institutions is related to the environment in which it takes place. One of the dominant features of undergraduate education in universities is that it is usually confined within one subject area and often, especially in Britain, to one discipline. At least since Aristotle, men have commented on the differing demands made on the learner by different bodies of knowledge, and a complicated set of culturally defined norms and rituals has come to be associated with the process of learning and teaching in different disciplines. We shall look in more detail at differences in students' approaches, and in the contexts of learning provided in different subject areas, later in this chapter.

But the context of learning is not defined solely by the type of subject being taught and researched in an academic department. Teaching and assessment procedures vary between different academic units, although the effects of these differences on student learning are poorly understood. The realization that university teaching contexts might have unintended consequences for learning—that they might discourage students from coming to grips with the fundamentals of their subject and encourage them to use tricks and stratagems to pass examinations—is certainly not a recent one. At least by the mid-nineteenth century the relationship between teaching and assessment methods and the quality of student learning was recognized. Cardinal Newman, for example, advocated "self-education" as "preferable to a system of (university) teaching which, professing so much, really does so little for the mind". Students who did without contact with what Newman held to be inappropriate

teaching methods were more likely

to have more thought, more mind, more philosophy, more true enlargement, than those earnest but ill-used persons who are forced to load their minds with a score of subjects against an examination, who have too much on their hands to indulge themselves in thinking or investigation, who devour premiss and conclusion together with indiscriminate greediness, who hold whole sciences on faith, and commit demonstrations to memory. (Newman, 1852)

A little later in the century, Pattison rounded on the Oxford assessment system in equally uncompromising terms.

[The examination papers] could not be answered by a mere knowledge of the subject . . . Quite another way must be taken in the preparation of the candidate. For two years the pupil is thus forced along a false road of study in which neither science nor philosophy encounter him. Memory is really almost the only faculty called into play. (Pattison, 1876)

The examples could be multiplied. Thorsten Veblen (1918) wrote a bitter and sardonic critique of the American academic establishment in *The Higher Learning in America*, arguing that impersonal staff-student relationships and rigid assessment systems had destroyed scholarship and understanding in the process of increasing the apparent efficiency of universities. Whitehead (1932) described an "evil path" in education along which easy texts enabled answers to be learnt by heart and reproduced in the examination, and worthless teaching churned out the same knowledge time and time again, unleavened by a spark of imagination.

More recent research work, such as the studies by Snyder, Becker, and Miller and Parlett described in the first chapter, unfortunately seems to confirm the potentially debilitating effect of the academic environment on student learning. Students may often respond to the "hidden curriculum" whose intentions run counter to those of the teaching staff. Instead of developing independence in judgement, problem-solving and analytic skills, they are obliged to devote their attentions to the narrow requirements of assessment, including the memorization of ideas and facts.

Yet the picture is not uniformly gloomy. There is evidence to suggest that there is another side to the academic context. Good teaching and student control over pace and subject matter may facilitate understanding. Links between effective learning, satisfaction with studying, choice over topics of study, and positive evaluations of teaching have been discovered in a number of investigations (see, for example, Centra, 1976; Brennan and Percy, 1977; Fearn-Wannan, 1980) — although it is still unclear whether we can regard these as causal relationships. The arguments of a number of educational theorists, however, do indicate a functional link between the context and students' intentions to understand. Whitehead (1932) and Rogers (1969; see also Chapter 1), among

others, argue that an appropriate mixture of imaginative teaching, choice and structure in the curriculum, and fitting assessment methods, can help students towards personal meaning in learning.

# A Framework for Understanding the Effects of the Learning Context

Let us now turn to the more recent findings concerning the effects of the context of learning on students' approaches to studying. It is worth reemphasizing that our concern here is with the ways in which students' perceptions of assessment, teaching, and courses may influence their attitudes and approaches to studying, and not with apparently objective characteristics of the context such as continuous assessment methods, the use of learning packages and aids, and the division of teaching methods into lectures, tutorials and other techniques.

We can best try to understand the effects of the context of learning by examining the relationship between students' approaches and their perceptions of learning tasks at a number of separate but interconnected levels. Students' approaches depend on their interest in the task and their previous experience of the area to which it relates; these influences are themselves associated with their perceptions of how the work will be assessed and with the degree of choice over content and method of learning available to the student. The perceived demands and support of teachers, and the content of the subject, also influence the students' approaches. At the most general level, the atmosphere of the academic department affects students' study orientations and ultimately their approaches to specific academic tasks.

# The Student's Interest and Experience

The student's intention to understand or to reproduce material is very clearly related to his or her interest in carrying out the learning task, either for its own sake or in response to external requirements. Chapter 3 reported the work of Fransson (1977), for example, who showed how a lack of interest in the material studied, or a failure to perceive relevance in it, was associated with a surface approach, while interest was related to a deep approach. Here a British student identifies a similar contrast in the natural setting of her courses; having described a deep approach to essay-writing in one part of her Literature course, she compares this with her approach in a subject in which she is less interested.

It's a bit confusing, [this subject]. When it comes to writing essays, because I'm not very interested in it, I tend to rush through the books I'm reading for the essays, so I don't really understand it when I've finished reading. And because there's such a lot of information I think you can either oversimplify or get into too much detail. I think I tend to oversimplify.

Attempts to understand the material being studied may also be frustrated by inadequate background knowledge of the relevant field. This is

especially the case where the learning task demands that the student has grasped a fundamental concept. To the extent that this kind of task is more commonly set in scientific subjects, background knowledge is more frequently related to the approach a student takes to a task in science than in arts and social science disciplines. Conversely, students tend to mention the effects of interest (or lack of interest) more often in arts subjects than in science ones (Ramsden, 1979). Here a physics student describes how his previous knowledge of a type of problem helps him to take a deep approach, while his weakness in a basic mathematical concept makes his approach to another part of the same question anxious, passive and superficial.

It was like one of the guestions from a previous course, which I could relate. It was a Schrödinger equation for a particle in a box, which we'd solved generally before in chemistry, so I could relate it. I could see a picture of what I wanted. I knew basically what sort of answer I should get, and from that I could work my way through it . . . The other bit was different; I couldn't do it. Basically I gave up with it, because it was a function, which I've never really understood . . . I looked at it and I thought "That looks complicated"...it was very short, it looked like it would need a lot of rearranging.

It is not surprising to find that interest and background knowledge are related to each other in the natural setting of student learning.

I think if I already know something about the subject about which I want to write, it helps. Because then I can write something out without having to refer to the books first, sketch something out in much more detail rather than just skeletal... This question was about popular recreations, and were attitudes to them changing. Well, having been grounded in Folklore — a consuming passion for the last eight years — I knew quite a lot about that already. So I just kind of wrote out three or four hundred words which gave a basis for it . . . mentally I was much more aware of accomplishing something useful.

#### Effects of Assessment

Even if they accept that interest and background knowledge influence a student's approaches to learning (and thereby the level of understanding reached), lecturers in higher education may attribute these effects to differences in students rather than to the effects of their teaching. Lecturers often argue that it is not their business to motivate students; poor academic progress, as we saw in the first chapter, is typically explained in terms of low ability or of a lack of interest or motivation on the student's part — but these are seen as faults in the student (see also Entwistle and Percy, 1974). The first thing to say about these arguments is that they are at variance with the results of the recent research. It is clear that students take different approaches to different tasks: more precisely. the same student takes different approaches in different circumstances. The second point is that evidence now exists to show that students' interests, attitudes to studying, and approaches to academic tasks are strongly related to their experiences of teaching and assessment. In other words, lack of interest or motivation can be seen as arising from a context, rather than being fixed attributes which a student brings to a situation — although past experiences (at school, for example) clearly affect current perceptions.

The study from which these findings were mainly derived was carried out at Lancaster University from 1978 to 1981. The research involved both an intensive interview study and a large scale questionnaire survey. Let us look first at the interviews. A group of 57 students in six university departments (physics, engineering, independent studies, psychology, English literature and history) formed the sample. The students were interviewed about their methods of tackling recent academic tasks set as part of their normal studies. The range of tasks included problem-solving, reading, essay-writing and report-writing. This focus on specific tasks avoided too ready generalizations and provided more detailed information about the strategies used. Students were also asked about what they thought "typical" ways of studying were in their own and in a contrasting subject area, and were encouraged to relate their approach to the particular task they had described to their experiences of the learning context. They were asked, finally, to say something about the "good" and "bad" aspects of the main department in which they worked. Transcripts of the interviews were analysed in a similar way to that described in other chapters; categories of descriptions for approaches and contexts and the relationships between them were identified, and later checked by other judges. Only a small part of the data is presented in this chapter; the extracts given are no more than illustrations of the categories and functional relationships revealed in the complete analysis (see Ramsden, 1981; Entwistle and Ramsden, 1983).

We have seen throughout this book, in experiments and in everyday studying, that perceived assessment requirements are strong influences on the approach to learning a student adopts when tackling an academic task. For example, questions designed to encourage a surface approach to reading succeed in their intention (see Chapter 3); assessment of an overwhelming amount of curricular material pushes students into surface approaches and an incomplete understanding of the subject matter (Chapter 2); and the approach to problem-solving is related to the student's perception of marking (Chapter 8). It was also shown how perceived anxiety adversely affected the approach to learning (Chapter 3). Where students felt that the assessment situation was threatening (whether the threat was objectively present in the experimental design or not), they were more likely to adopt a mechanical, rote learning approach to the learning tasks.

Similar findings emerged from the Lancaster investigation in relation to a whole series of academic tasks and also to students' general attitudes towards studying. Students often explained surface approaches or negative attitudes in terms of their experiences of excessive workloads or inappropriate forms of assessment.

I look at [the topic] and I think to myself, "Well, I can do that if I can be bothered to hunt through hundreds of textbooks and do the work" — and you sort of relate that to the value of the work in the course, which is virtually zero because it's so much exam assessment ... I just don't bother with it until the exams come around ... my revision is basically for the exams, purely and simply aimed at passing the exams without bothering too much about studying the subject. (Physics)

In very few of the lectures was I picking [the principles] up as we did them. It took me all my time to get the notes down. So, and this in a way, the pace is so fast that you get the notes down and that's it. You don't really follow what's going on. You can't do two things at once. You can't sit back and listen to what's being said. You spend an hour taking notes down . . . I put this down to this very keen desire to cover that much work. (Engineering)

It seems that if you follow a sort of straight line you seem to do better than if you, you want to pass any ideas of your own. You see, this essay I got back — which was a B — I wouldn't have thought I'd have got a B for that because I'd really got it all, out of a book, sort of thing, I'd just put it down in my own words . . . when I've put my own stuff down, it's all wrong. So, much more than I thought, they are, I suppose, looking for a reproduction of what's written elsewhere. (Psychology)

Taken together, these findings show that overloading of syllabuses and inappropriate assessment questions or techniques may force students into taking reproductive approaches. The factual overburdening of syllabuses may explain why students display such a poor level of understanding in assessments which demand something more than the reproduction of well-rehearsed answers. What still remains unclear, however, is how to encourage deep approaches by attention to assessment methods. The attempts reported in Chapter 3 showed how difficult it is to induce deep approaches, at least by simple techniques of asking different types of questions.

Of course not every student responds to assessment pressures in the same way. But the range of responses itself demonstrates the powerful effects of the perceived assessment context. Some students will actively exploit the opportunities offered by assessment methods which allow good grades to be obtained without understanding or without personal commitment to what is being studied, while others will accept the system at face value (Miller and Parlett, 1974; Ramsden, 1979). Whether the response takes this "strategic" form or not, the effect on the quality of learning is still present. It is not only the lecturer's stereotypical "weak"

student who resorts to surface approaches. The quotation from the interview of a psychology student at the beginning of this chapter, for example, comes from a student who obtained a first class honours degree. Some assessment procedures invite, even demand, rote learning. Another academically successful student from the same course illustrates how the form of continuous assessment he experienced discouraged him from using an approach aimed at developing personal meaning in learning.

With that essay I was just discussing, that reference group one, I wrote for, with a, the image of a marker in mind, the personality, the person, I find that's important, to know who's going to be marking your paper... you see an essay is an expression of thought, really, but that's not what they're after, they're after a search through the library, I think, and a cribbing of other people's ideas.

These findings suggest that the experience of learning is made less satisfactory by assessment methods perceived to be inappropriate ones. High achievement in conventional terms may mask this dissatisfaction and also hide the fact that students have not understood the material they have learnt as completely as they might appear to have done.

# **Effects of Teaching and Course Design**

Inappropriate assessment procedures encourage surface approaches, yet varying the assessment questions may not be enough to evoke fully deep approaches. How then may the context of learning be used to help rather than hinder understanding? It is probably true that assessments which are seen to require deep approaches by the students can discourage the use of reproducing strategies (see Elton and Laurillard, 1979). But a positive influence on deep approaches seems more likely to come from two other aspects of the context of learning: good teaching and greater freedom to choose both content and ways of learning.

Although staff development efforts in higher education have typically been directed towards improving teaching techniques (lecturing, giving tutorials, using audio-visual aids), the research evidence (see, for example, Dubin and Taveggia, 1969) suggests little direct effect of teaching on learning. What has been missing is the important indirect effects. How teaching and assessment affect students' individual ways of studying and, through those, what they ultimately learn has not been given enough attention. The ethos of higher education, especially in Britain, emphasizes individuality and autonomy. It is very much a part of this ethos that what students do with their own time is their own responsibility: success is seen as the reward for the students' own efforts and ability. Lecturers rarely know, and perhaps feel it is not their concern, what students do in their private study time or even in lectures. Yet teaching does have important effects, in ways which we are only just beginning to recognize.

Teachers in higher education have considerable responsibility for the

organization of their own courses. Most of us have memories of an inspiring teacher at school or at university who developed in us an interest in a field of study; such recollections are frequently complemented by thoughts of a lecturer who so bored and confused us that we were put off studying a subject. Such anecdotal impressions can now be complemented by the results of rigorous analysis of interview data concerning students' experiences of learning. This research makes it clear that lecturers in higher education do have far-reaching influences on learning. The relationships identified in these studies are not direct ones between teaching methods and student achievement, but indirect ones connecting students' perceptions of what lecturers do with their approaches and orientations to studying.

These important links have already been suggested in Chapter 4. Hodgson's work shows how some lecturers' approaches to teaching, as perceived by their students, can shift students' perceptions of the subject matter from extrinsic to intrinsic. Students may begin to experience the relevance of the content of the lecture for their own understanding if the lecturer can communicate interest and enthusiasm as well as information.

The study carried out at Lancaster enlarges on these findings. Students' perceptions of the quality of teaching they experienced were found to be functionally related to their attitudes towards studying and their approaches to learning. These effects can be seen to work in a number of different ways and, as will be made clear later, have several implications for improving teaching. The influence of the teaching context is illustrated here by a series of extracts from the Lancaster interview data.

The lecturer's interest in students, and helpfulness with study difficulties, are the first important qualities influencing students' attitudes and approaches.

I find that the courses I do most work on are the courses where I get on with the tutors best ... a tutor can put you off the subject . . . some of them don't like students, so they're not interested in what students have to say unless it's relevant to their approach. (English)

Luckily I'm doing some courses with some good tutors on them — you know, they make the books come alive because they can talk about them and they can direct you to a chapter or a passage, and that's important I think... you could spend an hour rooting through and then just come to what you think is the essence of it all ... if you get a guideline from the tutor, and I'm quite lucky in having someone who can point the way, then it's a godsend. (History)

I think a lot of the [lecturers] are just not particularly interested in you. I mean there are some who are . . . but some tutors, you know, just don't really bother if you learn or not; they just prefer to sit there and wait for you to think of what you don't know - I mean, if you knew what you didn't know you'd probably learn it

anyway. I've got a tutor like that at the moment ... it's no good at all. (Physics)

As long as I'm doing a subject that I'm interested in, it doesn't really matter to me how they do it ... I prefer departments to be organized and efficient, and also, more important, that's caring about their students. That to me is more important than the procedure of the coursework, you know... (English)

Commitment to the subject area—and hence, enthusiasm on the lecturer's part — may also encourage a positive attitude in students.

If they (tutors) have enthusiasm, then they really fire their own students with the subject, and the students really pick it up... I'm really good at and enjoy [one subject] but that's only because a particular tutor I've had has been so enthusiastic that he's given me an enthusiasm for it and now I really love the subject. But at the beginning of [another course] the tutor was...a little bit passive for my liking ... something imaginative was lacking, there was something lacking in the seminar group... (English)

The ability to teach at the student's own level, and lecturing ability in general, are also relevant.

We had a problem sheet to hand in for yesterday, which was really hard because the guy that's lecturing to us is really terrible... He's given equations and in the lecture notes there's nothing about them, because he just goes on and on and mumbles to himself — nobody likes him at all . . . then you're asked questions on it, you don't know where to start. (Physics)

My criticisms will be very closely aligned to, I think, the lack of empathy that some of the staff have about the ability levels of the students relative to their subject. Not relative to being able to be good enough to be at university, if you like, but relative to the fact that the concrete knowledge that they have is virtually nil in some of the areas that we're talked at, at a very high level. So you can't attach anything that you've been told to something that you already know, which of course is a very important point in learning... I think it's the overall problem of the experts coming in and having to give courses in a few weeks on their particular interest, and they have such a wealth of knowledge in that area that they start at too high a level. That's what I think happens. They've gone so far into their own area that they've forgotten that we know nothing, essentially, compared with them. (Psychology)

The concepts are really difficult anyway. It usually takes, I think most people like, I certainly like to sit down on my own and go at my own speed. Now the lecturers certainly assume that we know it and they just keep going. People can say, "slow down" but people of course are reluctant to say they don't understand it. So

he tends to keep going, and once you get behind it, you know, you can't really get back on terms. (Engineering)

Providing useful feedback on a student's work also influences learning, in these students' experiences. Lack of information about performance makes further learning more difficult.

You give an essay in — I gave in two at the beginning of the second term and I didn't get those back till this term . . . you know, it's a bit difficult when you're writing the next essay, because you want to know where you've gone wrong and the points that have been all right . . . By the time you've got it back after waiting a whole term you've forgotten what it's all about and it doesn't really mean much then. (English)

Lecturers also have a great deal of say over the amount of structure, and over the balance between teacher and student direction, in their programmes of study. There is a vital connecting link here between what teachers in higher education do and how students approach learning, as the second part of the Lancaster study will show. We have already seen how interest in the learning task for its own sake tends to evoke a deep approach. Logically, interest in the task is likely to be greater if the student has a favourable attitude towards the subject-matter to which it refers and if the students perceive themselves to have choice over the content and method of study. The ideas of choice of subject matter and freedom in pursuit of knowledge are threads running through the history of higher education (see, for example, Dewey, 1916; Whitehead, 1932) although the application of freedom in learning to undergraduate education, except in its latest stages, is unusual.

These extracts from interviews of students undertaking independent studies programmes suggest a connection between learning contexts which offer choice in both learning topics and study methods, and favourable attitudes towards studying.

If you're doing independent studies you're obviously interested in what you're doing. Therefore you're in a much more relaxed mental state for approaching work: I am, anyway, and other people I know in the course are.

In reading a particular bit of the book that I thought was relevant I was relating it to the overall arguments within the book... and also relating it to the overall directions of the independent studies project I was doing. But that particular approach was a product of my desire to sort of do a bit of creative, original work. Had I been writing a straight essay... I probably would have just, sort of, taken out the main points and strung them together in a typical essay form. So I think there's a definite difference between reading a book with the objective of simply summarizing the argument and reading a book with the objective of using those arguments for your own ends.

On the other hand, freedom in learning brings with it greater responsibilities. Lack of structure and clarity in the goals of study may defeat the intentions behind greater choice, at any rate for some students.

You have to take responsibility for the work yourself. You're not, you don't have the advantage of a pre-existing framework of suggested reading and suggested approaches in independent studies, so you have to be damn sure that you are interested enough and confident enough to see it through those times when you come to sort of minor crises, when you realize suddenly that it's all on your shoulders and you've got no-one else to go to... It requires commitment and personal motivation.

There is by no means a simple equation linking less structured learning contexts with more effective learning in higher education; there are likely to be particular difficulties for anxious students, as we should expect from studies of the school learning context (see, e.g. Wade, 1979). But the wide variation in styles of learning preferred by students, together with the logical and empirical links between interest, approach and outcome, suggest that variety in the mix of learning tasks and some choice over subject matter is desirable.

# The Context of Learning in Different Subject Areas

Even the casual observer of higher education cannot fail to notice that important differences in the context of learning are associated with different subject areas. It is clear from previous research that contrasting academic departments are inhabited by different kinds of lecturers and students. By far the most pervasive contrasts are between arts and science subjects, and between professional and non-professional courses. It appears that lecturers in science departments are more likely to prefer formal, structured approaches to teaching and assessment; in arts and social sciences, teachers endorse more flexible and individualistic methods. Not surprisingly, the students in the different types of department have complementary attitudes, while the students' perceptions of departments in the contrasting subject areas also correspond closely to the differences in lecturers' approaches to assessment and teaching (Gaff, Crombag and Chang, 1976). But are the students' approaches to studying related in some systematic way to the different attitudes and demands current in different subject areas? Whether these different demands are essentially culturally determined or in some way inherent in the subject-matter of different disciplines is not important here: our concern is with the different perceptions of students in different subject areas.

Students interviewed in the Lancaster study (Ramsden, 1981) were asked to identify possible differences in approaches to learning and learning contexts in different subject areas. Not unexpectedly, the dominant contrast made by these students was between science and arts

disciplines. Their comments reveal consistent, subjectively-defined differences between the types of learning expected in the different subject areas. Science and arts students agree on what the differences are. Learning tasks in science are typically described as hierarchical, logical, heterogeneous, and rule- and procedure-governed.

They [science students] go about it more logically...you get this impression of the history student being airy-fairy and temperamental... scientists deal in fact, while history students and artists deal in theory—we discuss theories and opinion. (History)

It's much more — exact isn't the right word — but in Physics you're right or wrong . . . here you can't think it, it happens. (Physics)

But for the sciences, they have to be more calculating, they have to know logical concepts, they have to know logical things and how an answer will come out of a calculation or a few statements which have been written down. (English)

A lot of our stuff is just sort of, you know, teaching us a logical flow of arguments, observing certain results, concepts and how they're related, whereas . . . (Physics)

Arts and social science tasks are seen to require interpretation, comparison, generalization, and to be more self-governed and easier.

[Arts students] seem to have a much easier time of it. They read a lot more, of course, they've got to read all these books, but...it seems much easier...it seems to be just going on and on about what you yourself think... In these other subjects you can just sort of go on and on: "I think this, I think that". (Physics)

The work demands, in a way, a completely different intelligence. For us it's more interpretation, more analysis, more penetration into the material... They have to look ahead to an answer: we have to look in... For English you have to see implicit meaning. (English)

History, you can waffle, you can cover up your mistakes....no-one can either prove you right or wrong...you've got to take all things into account. (History)

A lot of [History] is just hypothesis, why did this guy do this? and so on — it's a lot less certain. (Physics)

The most revealing thing about these interview extracts is that they mirror with surprising accuracy the theoretical constructs we met in Chapter 8—operation and comprehension learning (Pask, 1976). The manipulation of concepts and objects within the subject-matter domain, the emphasis on procedure-building, rules, methods, and details are characteristic of operation learning and the science approaches described

by the students. The description and interpretation of the relations between topics in a more general way is the defining characteristic of comprehension learning and is related by these students to typical approaches in arts and social science disciplines.

These differences are in turn related by the students to the different demands of the context of learning in arts and science departments (see Ramsden, 1981). Formal teaching methods, limited choice of topics, clear goals for learning, and vocational relevance, are associated with operation learning and science departments; informal teaching methods, unclear goals, and so on, are related to arts and social science departments and comprehension learning styles.

It should be emphasized that we are not maintaining that these differences are immutable differences between subject areas. They are students' perceptions of differing demands and reveal a good deal about how the typical learning tasks set in arts and science departments are interpreted by students. For full understanding of any complex subject-matter, according to Pask, both styles of learning need to be employed. Of course, the differences described above are students' stereotypes and further research is needed to discover more about how specific academic tasks are seen to be presented in different disciplines. But it may well be that differing disciplinary emphases inhibit, at least for some students, the development of a versatile style of learning in which both comprehension and operation learning are appropriately used. At its logical extreme, this perceived bias in tasks typically set could lead to science students being unable to describe the meaning of what they know, and arts students being incapable of deductive reasoning.

The next step in examining the relationship between subject area contexts and approaches to studying is to ask whether deep and surface approaches to learning reveal themselves differently in different contexts. Marton's original distinction between deep and surface approaches was derived from analysis of interview protocols in which students described how they read an academic article (see Chapter 3). Laurillard has found an equivalent distinction in approaches to problem-solving, and parallels with these categories can also be seen in relation to listening to lectures and writing essays. In normal studying the surface approach implies not only a concentration on words or details to the detriment of understanding, but also an over-awareness of assessment demands which leads to an intention to reproduce knowledge. In the Lancaster interviews both deep and surface approaches in normal studying were found clearly, but were expressed in different ways in different subject areas, because of the requirements of typical learning tasks in the different contexts.

From the interviews it emerged that even a deep approach to learning tasks in science departments often demands an initial concentration on details which is empirically hard to separate from a surface approach. This means that the descriptive category needs to be redefined somewhat in order to include this prior stage. In the humanities, in contrast, a deep approach is revealed more commonly by the student stressing, right from the start, an intention to re-interpret the material in a personal way. In

describing surface approaches, science students are more likely to stress an over-concentration on techniques and procedural details, while the arts and social science students tend to report a more generalized, vague approach—oversimplifying in reading or essay-writing, or memorizing unrelated generalities in their preparation for assessments. These differences in emphasis in deep and surface approaches show how the meaning of this fundamental dichotomy has itself to be understood in terms of the context in which approaches to learning are realized.

#### **Study Orientations and Perceptions of Academic Departments**

Although it is clear that the same student may use both deep and surface approaches on different occasions, there was evidence from the interviews that students also showed general orientations to studying. These general tendencies to adopt particular approaches to learning have been found to be associated with characteristic forms of motivation and attitudes to studying (Ramsden and Entwistle, 1981; Entwistle and Ramsden, 1983). Two of these orientations, meaning orientation and reproducing orientation, are conceptually similar to the deep and surface approaches, even though they describe relatively consistent tendencies in individual students.

The study orientations, however, are not assumed to be unchanging characteristics of students: just as students change their conceptions of learning over time, so they may shift their study orientation during a programme of higher education. This raises an intriguing question at the most general level of the relationship between the context of learning and students' approaches to learning: is the context of learning in different academic departments systematically related to their students' study orientations? The qualitative analyses of students' approaches in relation to their perceptions of teaching and assessment suggested that it should be possible to identify such a relationship. We might expect, for example, that departments perceived to have excessive assessment and syllabus demands would create reproducing orientations (corresponding to surface approaches) in their students.

A complicating factor is the discipline taught in a department. Study orientations vary from one subject area to another, just as the meaning of the deep and surface categories differs in different subject areas. However, the teaching and assessment policies do differ between departments teaching the *same* discipline and so relationships with study orientations may still be observed.

Such relationships could only emerge from an analysis of a substantial number of departments and a much larger number of students. Partly as a result of earlier work at Lancaster, and partly from the research of Biggs (1978) and the ideas of the Gothenburg researchers, an inventory of approaches to studying was developed suitable for administration to large samples of students (Entwistle et al., 1979b; Entwistle and Ramsden, 1983). The inventory asks students about their general approaches to academic work in the normal context of their main courses. By item and

# TABLE 9.1 Categories in the approaches to studying inventory

Meaning orientation	
Deep approach	Looks for meaning; interacts actively; links with real life.
Use of evidence	Examines evidence critically and uses it cautiously.
Relating ideas	Actively relates new information to previous knowledge.
Intrinsic motivation	Interested in learning for its own sake.
Reproducing orientation	
Surface approach	Relies on rote learning; conscious of exam demands.
Syllabus-boundness	Prefers to restrict learning to defined syllabus and specified tasks.
Fear of failure	Anxiously aware of assessment requirements; lacking in self-confidence.
Improvidence	Not prepared to look for relationships be- tween ideas; fact-bound.
Strategic orientation	
Strategic approach	Actively seeks information about assessment requirements; tries to impress staff.
Extrinsic motivation	Qualifications as main source of motivation for learning.
Achievement motivation	Competitive and self-confident; motivated by hope for success.
Non-academic orientation	
Disorganized study methods	Organizes time ineffectively, fails to plan ahead, not prompt in submitting work.
Negative attitudes	Little involvement in work set; cynical and disenchanted about higher education.
Globetrotting	Over-readiness to generalize and jump to conclusions without evidence.
Styles of learning	* .
Comprehension learning	Holist strategies preferred; uses illustrations, anecdotes, analogies and intuition to build up overall picture.
Operation learning	Serialist strategies preferred; concentrates on details and logical analysis.

conceptual analyses the questions can be grouped into a number of scales, and these are shown in Table 9.1. For our purposes here, the important scales are those making up the meaning and reproducing orientations.

The Lancaster research also made use of a questionnaire of course perceptions, with eight sub-scales (Table 9.2), which are the main categories used by students when they describe the context of learning in

Table 9.2
Categories in the course perceptions questionnaire

Evaluation of the department	
Good teaching	How much help is given with study problems; how competent and well-prepared staff are perceived to be.
Freedom in learning	How much discretion students have over the choice of content and methods of studying it.
Openness to students	How friendly staff are; how prepared they are to adapt to student needs.
Workload	How heavy the pressure to fulfil the requirements of the syllabus and assessment is perceived to be.
Social climate	Quality of academic and social relationships between students.
Subject area differences	
Formal teaching methods	Importance placed on lectures and classes relative to individual study.
Clear goals and standards	How clearly the standards of assessment and ends of studying are perceived to be defined.
Vocational relevance	Perceived relevance of the courses in the department to the students' future careers.

an academic department. The fact that students can respond to general questions of this sort, both in the questionnaire and in interviews, suggests that students are able to perceive general differences in teaching and assessment in departments in addition to specific differences between different lecturers within departments.

The scales of the course perceptions questionnaire divide into two main groupings. One of these—formal teaching methods, clear goals and standards, and vocational relevance—differentiates mainly between science and professional studies departments, and the rest. The second main grouping describes students' evaluations of the quality of the learning context in their department. Good teaching, freedom in learning, and staff openness to students are the defining characteristics of this evaluative dimension, with social climate and light workload playing lesser parts.

The inventory and course perceptions questionnaire are quantitative research instruments, but this does not mean that their use violates the assumptions of the perspective adopted in this book. They remain close to students' experiences of learning, as the constructs and items were derived from interviews rather than from a pre-existing body of theory. Our research strategy deliberately used an alternation of qualitative and quantitative methods. Of course the questionnaire results cannot tell us anything directly about the influence of the learning context on students' orientations: but empirical associations can be interpreted as functional

relationships when seen in conjunction with the students' interview comments on what had influenced their approaches to studying.

Let us now look at these results, which have been described in detail elsewhere (Ramsden, 1981; Ramsden and Entwistle, 1981; Entwistle and Ramsden, 1983). The inventory of approaches to studying and the course perceptions questionnaire were administered to 2208 students in 66 departments. The disciplines included were physics, engineering, economics, psychology, English and history. The two main study orientations (meaning and reproducing) could be identified in all the subject areas. These orientations were found to be related to students' perceptions of the context of learning in a way which was quite consistent with the interview results. Departments which were perceived to provide good teaching (and particularly help with studying) combined with freedom in learning (choice of study method and content) were more likely to have students reporting an orientation towards meaning. Reproducing orientations were more commonly found in the departments perceived to combine a heavy workload with a lack of choice over content and method. These relationships were not affected by the differences in students' entry qualifications in different departments, nor by subject area.

These results fit neatly into the findings of the experimental and interview studies which had related students' perceptions of learning contexts to their approaches to studying. Moreover, students' attitudes to studying in the departments were associated with their perceptions of the quality of the learning context. Just as students in the Lancaster interview study described relationships between effective teaching and positive attitudes to studying a topic, so the students in the survey who were working in departments that were evaluated highly were more likely to report involvement with their work. In contrast the students in the negatively evaluated departments were more likely to report cynical and disenchanted attitudes to higher education.

A second similarity in the findings from contrasting research methods is concerned with the strength of the association between students' orientations and their perceptions of the context of learning. Marton and Sallo (1976b) had showed that surface approaches to learning were relatively easy to induce in students, while deep approaches were difficult to encourage (Chapter 3). Just as we would expect from these findings, the survey analyses revealed that it was much easier to predict which departments would score highly on reproducing orientation than on meaning orientation. In other words, some departments seem to induce surface approaches in a direct way. Other departments appear to provide contexts within which students find it easier to develop an interest in the **subject** matter and to use approaches aimed at understanding. The influence is, however, less easy to predict, depending presumably more on the individual students. As we shall see in the next chapter, students differ greatly in what they want to achieve from their studying. If they want to make the academic content personally meaningful, these departments will facilitate such development.

#### **Conclusions and Implications**

In this chapter we have seen how important relationships between students' experiences of the learning context and their approaches to studying have been revealed by recent research. The findings have some significant implications for teaching in higher education. The detailed implications for practice are discussed in Chapter 11 in relation to the other work reported in this book; some aspects of more general relevance are considered here.

In these results are the beginnings of a model of student learning in context. The relationships are complex but should be recognizable to both teachers and students. At the most general level, we have seen how students' perceptions of assessment, choice over subject matter and methods of studying it, workload, and quality of teaching in academic departments are related to the main study orientations. The departmental context also plays a part, it would appear, in influencing students' attitudes towards studying — whether they feel that academic work is worthwhile. Previous research had shown clear links between inappropriate and excessive assessment demands and surface approaches. This effect is confirmed by the data from the departments in the survey. However it now also seems clear that some departments provide a context which facilitates the development of a meaning orientation. Further study of the detailed differences between these different types of department should reveal how changes in teaching and assessment procedures might discourage a reproducing orientation and allow deep approaches to emerge.

Students' experiences of teaching and assessment influence their approaches to learning, both directly and indirectly. Thus interest and commitment to a subject area can be fostered by certain experiences of teaching and by perceived freedom in learning, and intrinsic interest is fundamentally related to a deep approach. Inadequate previous knowledge of a topic, itself partly a consequence of inadequacies in teaching, and the anxiety created by insensitive teaching or an overdemanding syllabus, push students towards a surface approach, as a coping ploy.

This model is complicated by the need to consider subject area differences. It appears that there are systematic differences in students' perceptions of appropriate ways of learning in arts and science disciplines, and we have also seen how the meaning of the deep-surface distinction shifts in relation to students' reports of their experiences in different subject areas. The disturbing implication of this part of the research is that at least some students may be handicapped in the development and use of both operation and comprehension learning styles by the dominant culture of the discipline in which they are being trained. This is not a question of whether one style of learning is objectively more appropriate to some inherent characteristics of the subject-matter, but rather of how the tasks set in an undergraduate arts or science course may be biased towards the use of one or the other style. As both styles are characteristic of versatile and competent learners, it is important that learning tasks are

seen by students in all subject areas to require the development of both styles. Scientific thinking does indeed involve much attention to details, logical analysis, and strict adherence to procedures, but it also requires students to interpret data in relation to their own experience. Similarly, personal interpretation and description certainly are important in the humanities; but so is the ability to analyse evidence rigorously. If the perceived context of learning overemphasizes one style, then students may develop inadequate approaches to learning.

These arguments suggest that greater variety in learning tasks, and in forms of teaching, would probably be beneficial to students in all subject areas.

One way of providing this variety is by increasing students' choice of method and content. As we have already seen, freedom in learning is valued by students in all subject areas and is related to deep approaches to learning. Freedom of choice, however, should be complemented by a provision of clear frameworks within which that choice is exercised. Unstructured freedom is unlikely to develop versatile learning skills.

The single most important message to emerge from these research findings is that intense effort must be made in course planning, and in the setting of assessment questions, to avoid presenting a learning context which is perceived by students to require, or reward, surface approaches. It is not enough to assume that course materials or assessment methods will encourage students to think deeply about the subject matter, however carefully they have been designed: it is necessary to consider the students' perspective on what is required. It is useless, for example, simply to tell students that verbatim reproduction of information in an examination is wrong, to expect this warning to discourage surface approaches, and to blame the students when it does not. If students feel that there is insufficient time to study the examined topics properly (perhaps because of the demands of other courses), or if they have experienced inadequate teaching, or if they are given high marks for reproducing lecture notes, or if their previous knowledge within the area is insufficiently developed, then they will feel constrained to use surface approaches. Only by studying the internal relationships between how students perceive course demands and how they approach studying can the complexity, and apparent paradoxes, in student learning be understood.

This indirect connection between how lecturers teach and how their students learn has a crucial implication for how we should try to develop teachers' competence in higher education. It suggests that staff development programmes should aim not only to improve teaching skills, but also to increase lecturers' awareness of their students' experiences of learning. In the last analysis, these two facets of staff development are inseparable. Good teachers have to be aware of their students' needs and purposes, sensitive to their students' perceptions of the course—and adapt their teaching and assessment methods accordingly. Our attention should be on the quality of learning, not simply on how to improve the techniques of teaching.

This emphasis on the effects of teaching is, however, not intended to remove responsibility entirely from the student. On the contrary, the decision to use different approaches to studying is largely in the student's own hands. Different students want different things from higher education and respond differently to similarly perceived conditions. Some cope better than others with adverse assessment and teaching conditions, and only part of the variation in the quality of learning is explained by contexual influences. But it would be a mistake to try to force a dichotomy between student characteristics and context in understanding how students learn. If we accept that individual students' learning skills will affect which approaches they use, and whether they achieve their goals, we should also recognize that learning skills are themselves influenced by previous experiences of learning contexts.

This leads to the last implication of the results to be discussed here. Lecturers in higher education can do much to help their students improve their approaches to learning. Many teachers still see the development of students' learning skills — ranging from the general organizational aspects of study skill described in Chapter 4, right through to specific "study skills" like note-taking techniques—to be outside their competence and responsibility. There are compelling arguments for trying to change this attitude. Not the least powerful of these arguments derives from the results of the research reported here. Students see help with approaches to studying to be an essential part of good teaching. In order to improve student learning, teaching staff should participate in organizing programmes designed to develop their students' learning skills, in particular their self-awareness as learners. At the same time, staff would find that their involvement in such programmes would increase their own awareness of the effects of teaching and assessment on their students and so help to make them more effective teachers.

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# CHAPTER TEN

# The World of the Learner

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#### Introduction

Previous chapters have progressively widened the focus of research on student learning. Starting from naturalistic experiments on reading, we have looked subsequently, first at other tasks and then at the effects on learning of the educational context—the perceived demands which so strongly influence students' approaches to learning and affect their levels of understanding.

The previous chapter described aspects of context defined in terms of students' perceptions of teaching, course work and assessments — what can be called the *institutional context*. In this chapter an even broader focus is used to take account of the *personal context* from which the student views studying in terms of personal goals and values, as well as the demands of courses and lectures. From this standpoint it becomes possible to examine approaches and outcomes in terms of the broadest possible picture of a student's experiences of learning.

This total 'world view' of a student's experiences of learning can be represented as a series of interrelated concepts which describe learning at increasing levels of generality. At the most general level there is the personal context for studying, that is a student's aims, values and purposes for study. We shall call this a student's educational orientation. The experience of learning also depends on the institutional context—the way in which a particular educational institution operates, with its norms, values and traditions, and its particular procedures for teaching and assessment. And the institutional context, as we have seen affects the lower level concepts describing the students' experiences of specific learning activities—learning approaches and outcomes.

In this chapter, we shall build up a broad picture of the world of the learner by exploring these various levels of description through case studies of particular students.

To highlight students' overall experience of learning or their perceptions of gains from study, consider the following replies to the question—"What have you learnt from the course?" (which was asked of students who had just completed a foundation course in Social Science with the Open University. The quotations from six students show that it is possible to gain very many different kinds of things from the same course. (See Taylor et al., 1982 for further details.)

I've learnt about the different disciplines and about the way the society's changed over the centuries since the industrial revolution and how this has changed everything.

... well basically an insight into methods of looking at different things. I mean, it was so broad, it has set things in perspective and so it's a good introduction to different facets of the subject. The way different disciplines will look at something, different attitudes of the sociologist and the more specific examination of an individual that a psychologist would make.

I've learnt, I think this business of being sceptical is quite a big thing. Questioning things a lot more. I think probably to live in the future, if I don't carry on with Social Sciences that's probably the most valuable thing that I feel that I personally got from the course. When I read a newspaper or watch television or something I find that I'm a lot more questioning than I used to be.

I think the biggest thing is the confidence — that perhaps I'm not as stupid as I thought I was.

I suppose I'd have missed a lot of what I've learnt in relation to my work about the psychology of work and that kind of thing and perhaps thinking about things a bit deeper. Whereas I was inclined to take decisions fairly quickly on certain things, now I do have certain experience having studied a bit of psychology and sociology in places and I do try and perhaps see how things are going to interrelate and affect people — spend a bit more time on it and be a bit more thoughtful than I was before.

I think it's given me different ideas as to how I'll approach my course next year. I will take notes which I didn't do this year—I didn't know really what to do and what not to do this year. So I'll do quite a lot of things differently. I think I'll just approach the whole learning bit, if you like, differently next time. And what else have I learnt?—I suppose on a personal level I've learnt to use my time effectively.

Besides gaining an understanding of the course content, which is the teacher's or course team's main aim, students mention the personal and affective aspects of study—gaining in confidence; changing in attitudes; and increasing critical awareness and scepticism. As teachers and researchers, we may be too ready to accept students' assessment grades and their understanding of the course content as the sole measure of success. However, it is clear from these quotations that, from the students' point of view, other aspects can be equally important.

Describing the world of the learner must take account of both institutional and personal contexts for study. What are the formal demands of the assessment system—what sort of understandings are valued and rewarded by the formal curriculum? What are students' aims and purposes in engaging in a course of study?

# The Importance of the Context of Learning

#### (i) The institutional context

In previous chapters the outcome of learning has been described as a change in conception of some concept, issue, or aspect of the world. The quotations above show the diversity of these changes, and the previous chapter showed some of the ways in which the institutional context influence the outcomes of learning.

A similar interpretation of the effects of assessment was provided by Becker, Geer and Hughes (1968). In "Making the Grade", they showed how the "grade-point average perspective" pervaded the entire college experience for students and provided the background for their studies. The grade-point average perspective involved a "definition of the situation" by students who identified grades as the most important focus for their actions. Students felt that getting good grades defined success and that gaining these grades was of primary importance for their college career.

There's an awful lot of work being done up here for the wrong reason. I don't exactly know how to put it, but people are going through here and not learning anything at all. . . . There's a terrific pressure on everybody here to get good grades. . . . There are a lot of courses where you can learn what's necessary to get the grade and when you come out of the class you don't know anything at all. You haven't learned a damn thing, really.

In fact, if you try to really learn something, it would handicap you as far as getting a grade goes.

The conflict between 'getting the grade' and "really learning something" can be seen as an unintended side-effect of the assessment system. The pervasive influence of assessment defined the institutional context for studying—the grade-point average became the "campus currency".

At a more general level, the interaction of the education institution and the students can lead to particular sub-cultures. Clark and Trow (1966) described this interaction as follows:

Two broad sets of factors shape the nature of the orientations and relationships of students in college. The first set flows from the character of the larger society. Students come to college with certain resources — material, moral, intellectual, emotional, and cultural. These resources are largely determined by the life experiences the students have had, and these in turn are shaped by the statuses they and their parents have held in the larger society. The prior social locations and experiences also shape aspiration: the kinds of lives the students envision for themselves in a rapidly changing society.

The second set of determinants derives from the nature of the colleges

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themselves: their historical development, their value climates, their structural features, and the shaping environment thus provided for student life. A college is not simply an aggregation of students, teachers, and administrators. Although the character of a college is greatly influenced by the nature of its staff and students, it also has qualities and characteristics which are to some extent independent of the people who fill its halls and offices at any given moment.

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In our terms Clark and Trow were showing how distinctive sub-cultures emerged from the differing experiences of institutional and personal contexts of learning.

Clark and Trow suggested four main analytical categories to describe these sub-cultures. They are not describing types of student, as a student may well participate in several sub-cultures, and the actual sub-cultures that exist may well combine aspects of more than one type. They described the typology as "a heuristic device for getting at the processes by which social structures shape student styles of life in different kinds of colleges". The four main sub-cultures were labelled collegiate, vocational, academic and non-conformist.

The collegiate culture is the stereotype of college life, a world of sport and campus fun — some gesture is made to studying, but only in terms of the minimum requirements to gain a degree. The vocational culture is focused on getting a qualification and gaining employment; here the engagement in ideas and scholarship may be seen as a distraction, equivalent to sport and social activities. The academic culture, present on every campus, is the sub-culture of serious intellectual effort applied to the world of knowledge and ideas. Students pursue knowledge and understanding—their symbols of the institution are the library, the seminar group and teaching staff with the same inclinations. The non-conformist culture differs from other cultures in its detachment from the college. Students are involved with ideas and learning but their points of reference are off-campus groups. There exists in this distinctive student style a somewhat aggressive non-conformism and critical detachment from the college. Clark and Trow summarized this typology of sub-cultures in terms of two main dimensions—the degree to which students are involved with ideas—and the extent to which students identify with the college or institution.

		Involvement with Ideas		
		much	little	
Identification with College	much	ACADEMIC	COLLEGIATE	
	little	NONCONFORMIST	VOCATIONAL	

Types of Orientations of Four Most Distinguishable Student Subcultures. (from Clark and Trow, 1966).

They use the term 'orientations' to mean the "defining elements of student sub-cultures in which they appear as shared notions of what constitutes right attitude and action towards the range of issues and experiences confronted in college". This general use of orientation is rather different from what has been defined in this chapter as a students' educational orientation; the aims, values and purposes for study—the personal context of study.

# (ii) The personal context

How do students come to be taking a particular course? What are their aims and purposes in undertaking a course of study? With adult students, these questions are particularly important because of the voluntary nature of the education they are engaged in. The concept of motivation has often been used to explain variations in students' capabilities for studying. However, there are problems with the use of this concept. Firstly, as it has been used in so many different ways, there is a lack of precision with regard to its meaning (Peters, 1958; Parlett, 1980). Secondly, it has been used as an explanation of behaviour, which may not take account of the conscious control of learners over how and what they study. Where motivation is seen as a drive, students are viewed as essentially passive, being driven by factors out of their control. Similarly, some goal direction theories tend to view students as responding to stimuli, rather than actively constructing their own behaviour patterns. The focii of traditional studies are the motivational factors which push and pull students towards particular goals: e.g. to pass an examination. However, such theories of motivation are based on theories derived from other contexts and imposed on student learning without consideration of their validity. More recent work on motivation, in relation to study processes (e.g. Biggs, 1978 and Chapter 9), has developed constructs more closely associated with the study situation and students' intentions. The description of personal context for study or educational orientation further develops this work, to provide a more holistic description of students' motives and purposes.

Educational orientation is defined by "all those attitudes and aims which express the student's individual relationship with a course of study and the university", (Taylor et al., 1981). Educational orientation is the collection of purposes which form the personal context for the individual student's learning. Orientation assumes that students have an active relationship with their study. From the point of view of educational. orientation, success and failure is judged in terms of the extent of students' fulfilment of their aims. Orientation does not assume any state or trait belonging to the student; it is a quality of the relationship between the student and the course rather than a quality inherent in the student and so may change over time. The analysis of educational orientation therefore does not set out to type students, rather it sets out to identify and describe types of orientation and to show the implications of these different types of orientation for the approach a student takes to learning.

#### **Educational Orientation**

A study of students' orientations to learning at Surrey University (Taylor, 1983) identified four distinct types of orientations. These were academic orientation, where the student's goals were to do with the academic side of university life; vocational orientation, where the student's goals were to do with getting a job after university; personal orientation where the student's goals were to do with their personal development; and social orientation where the student's goals were to do with the social side of the university life. The first three of these types of orientation could be divided into two sub types according to whether the student was directly interested in the content of the course or whether they were studying the course merely as a means to an end. These sub-types were labelled intrinsic and extrinsic, respectively. Taylor found that the concerns that a student had while studying at university were intimately connected to the type of orientation they had and that these orientations and their concerns helped to make sense of the amount of effort the student made on different aspects of the course and university life (see Table 10.1).

TABLE 10.1
Student's Educational Orientations

Orientation	Interest	Aim	Concerns
Vocational	Intrinsic	Training	Relevance of course to future career.
	Extrinsic	Qualification	Recognition of worth of qualification
Academic	Intrinsic	Follow intellectual interest	Room to choose stimulating lectures
	Extrinsic	Educational progression	Grades, academic progress
Personal	Intrinsic	Broadening or Self-improvement	Challenge, interesting material.
	Extrinsic	Compensation or Proof of capability	Passing course, feedback
Social	Extrinsic	Having a good time	Facilities for sport and social activities.

A further study at the Open University (O.U.) (Taylor et al., 1981) found all these categories, with the exception of the Social orientation, among students taking the Social Science Foundation Course, Making Sense of Society.

# The Complexity of Educational Orientations

Although we have separated out these orientations into categories and sub-categories they are idealized extremes and not descriptions of the types of students in the sample. In fact, any particular student's

orientation will often be a complex mix of two or more of these orientational types. For example, many of the Open University students could clearly be seen to be mainly personally orientated but many of these had evidence of other vocational or academic orientations. To illustrate these joint orientations and the complexity of individual students' orientations, here is an example of a student who while primarily personally orientated, shows aspects of vocational orientation.

Well I hope to stop myself from turning into a complete cabbage — and to widen my views on life and the problems — eventually I hope to get a degree and possibly that will help me to get a job one day which I would like to do. But I think that that is very much a secondary consideration.

This quote shows clearly the personal aims and the secondary vocational aims of this student. We can expect that both these aims will affect the student's approach to the course and a detailed description of the orientation, including the relative strength of these aims should help us to understand the particular student's approaches to studying.

Similarly, where a student shows signs of having both personal and academic orientations, both aspects of the orientations will affect the student's relationship with the course. A student who is personally orientated but also academically orientated might be interested in personal development, but more in terms of the ideas to be explored in the subject than in becoming more capable in a general way.

I'm interested in man, in society and I realize how narrow a view I have about the way society works, about what other people feel and do and why they do these things. I got a bit from doing the A-level last year and I hope that I get an awful lot more from doing the Social Science Foundation Course this year.

In this quote one cannot distinguish clearly between the two orientations—they seem to mingle together as one orientation. However, a description of the 'ideal' categories of orientation helps to unravel a student's particular orientation and see the implications for approaches to studying. Further examples from students' interview transcripts help to elaborate these idealized categories of educational orientation.

#### Academic orientation — intrinsic

# (Intellectual interest)

This category of orientation is characterized by students who are primarily interested in studying a particular subject 'for its own sake'. They are intellectually interested in the subject and are interested to study at a higher level. Most students with this orientation already had some experience of the subject before coming to university and so tended to be 'syllabus free'. They want to follow up aspects of the subject beyond the defined syllabus. One student at Surrey University had taken this to an extreme.

I wanted to do sociology ... the interesting thing about sociology is that a part of it is called the sociology of education and — in studying education I'd become more aware of it in a more objective way — you start to see the place it has in society. You see sociology isn't a nine to five study, it's a continual thing in your social life — you are being a sociologist ... you are assessed so you've got to do a certain amount of course work ... I copy as many essays as I can and do that minimum amount of work in psychology and philosophy — in sociology I just try and do as much reading as I can and then when I write essays I always bring in much more — but I hardly ever answer the question — I'm always much too concerned with other things of interest to me.

So, the main concern of these intellectually orientated students is to be allowed to follow their own intellectual interests. In the interviews, these students often mentioned particular lectures which had fired their enthusiasm for parts of the course and they particularly appreciated parts of the course which allowed them freedom to choose their own topic, e.g., project work in the third year. They tend to criticize parts of the course where this sort of choice was restricted.

#### Academic Orientation — Extrinsic

(Educational Progression)

In this category students are primarily interested in *progression* through the educational system. They tend to have chosen the course because they had been successful in the subject at school, rather than study from an intellectual interest in the subject; it was thought of as 'the next step':

I wanted to do something and I've done evening classes but it wasn't really enough — I don't know — I've got through that sort of stage.

Well basically I'm studying it because I did three 'A' levels and one of them was sociology. English doesn't seem too good really unless you want to teach and economics — well I find the maths difficult... I suppose most of my work is for assessment. I do tend to try to work — to do my best as I can in essays because they're assessed. If you try to work hard you'll get a good mark then you haven't got much pressure when it comes to the exams.

Within this category, students are interested primarily in passing the courses and getting the degree. They tend to be competitive and to lay great stress on getting good grades. In contrast to the intrinsically interested academic students, they tend to be "syllabus bound" and in some ways may be described as 'model' students, in that their essays were always in on time and they work evenly over all the subjects in the

syllabus. The students with this orientation prefer to have clear guidelines as to what is required for assessments and to criticize parts of the course where there is little guidance.

#### Vocational orientation — intrinsic

#### (Training)

One of the courses studied at Surrey University was a degree in Hotel and Catering Administration, and, as one might expect, many of the students who were studying the course were vocationally orientated. There was, however, a profound difference in the concerns of students according to whether their aim was to get a qualification in order to get a job in the industry or whether their aim was to be trained as hotel managers. The latter were intrinsically interested in the course and were critical of any parts of it that they thought were irrelevant to their future careers. They tended to place emphasis on the practical side of the course and to like the industrial year best of all. Since their interest was in becoming trained, students with this orientation tended to work hard on the course while they could see its relevance to their chosen career.

At the Open University students are sometimes thinking not of a future career but of a current one:

...it appealed to me because the reaction of people is terribly important and it is not just seeing the reaction — I want to know the reason people react under various kinds of circumstances. So far, all I have is observations you know; experiences. It's important because I hope it will help me to understand people more. But I'm not going to use the qualification at the end of the day so that side of it is not important to me.

As we see here, this category is characterized by vocational concerns and an intrinsic interest in the course.

# Vocational orientation — extrinsic

# (Qualification)

Some of the Surrey students, rather than studying the course as a training, were interested in qualification aspects of getting the degree. These students were concerned about getting through the course and passing at the end. It mattered to them that a qualification was recognized by the profession they aspired to. Some students had investigated how far the grade of degree mattered in gaining a job and on that basis decided how much work they would do on the course. Some students decide that grades are unimportant to them.

I'm in for a third (-class degree) at the moment, I think I'm better than a third but I'm not that bothered — I don't think our degree is recognised that much by industry. And so you could say that it is

not that important. As long as I'm getting a pass mark or reasonably above, then good — I'm not going to go all out to do the best I can. I go out to get a reasonable mark.

The orientation a student has helps to explain the differential effort put into studying by different students. The above student, for example, did little beyond the minimum requirements of the assessment system. Given his aim—to get a degree in order to get a particular kind of job, and his belief that the grade of degree would not matter—the amount of effort he was willing to make, is understandable.

For the O.U. students with this orientation there was sometimes a fear that employers would not recognize the worth of their degree and this caused some anxiety. However, the expectation for many of them was that the degree would help them in promotion.

To get into this apex (top of the hierarchy) is going to be quite hard... okay I've got two sets of professional qualifications but I need this one to go with it. Because in a lot of people's eyes, particularly management trainers and development people, a degree is everything — it proves you've done something and it — you've trained yourself to think and express yourself clearly.

For this student, the choice of degree subjects was only important because the employer had to be able to see the relevance of these courses to the job. However, for those students who were hoping that the degree would qualify them to start a new career, the choice of course was less important and often a hit or miss affair. This was in contrast to those who were intrinsically interested in the training aspect of taking a course; then its relevance became crucially important to them personally.

For some of the O.U. students the degree course was seen as a way of ensuring that they could get a job sometime in the future. This was particularly so for women with young children.

I've got nothing behind me absolutely nothing. No qualifications — I've only had odd jobs before — as soon as the child is old enough I'll have to get a job. Somebody said — 'the O.U. that's your best bet'. It's an education basis — something behind me. You know, if I go for a job now I haven't got a chance — no way. And I know nothing except factory work and that's not what I want. I'm not all that bright but I'm not thick either. So I want something so I can go and get a decent job.

Personal orientation — intrinsic

(Broadening)

This category is characterized by students who are personally orientated and interested in being tested or improving themselves as individuals. The intrinsically interested student is concerned more with the *broadening* effect of education and is using university study as a means of changing.

In some ways the university is seen as a sort of finishing school, a place where new ideas and challenges can be used for self-development and improve your ability to cope with life.

It's a broad course — and I think it is an excellent course for someone like me who wants enrichment of life having missed the opportunity earlier in life.

In the course and all the other sides of university life these students look for stimulation and challenge, they are only concerned with the content of the course, insofar as they can see its usefulness as a vehicle for change and personal development.

The topics I like I will sit and read for ever — if I think it will be useful to me then I'll do more but some things aren't that useful.

This personal orientation is very common among Open University students and at Surrey University among mature students. For these students, the incentive to join the university comes often a feeling of frustration with their life.

I hadn't thought about that at all but I felt that I had to do something. I thought I was going round the bend being at home and I wasn't raring to go to get a job. I like looking after the house and the baby and that sort of thing, but somehow I wanted to do something else.

I suppose it was waking up one morning and finding I'm 35, sort of male menopause — I can't sit around here watching T.V. for the rest of my life — let's do something.

The importance of the course to these students concerned how it might change them as people making them more able to cope with life and making them more interesting people. They saw their study as purely of personal significance.

It is important to *me* because it's the only thing that is me and that only I'm doing and that none of my family or friends are doing. It doesn't matter to anyone else results wise how you get on — and I think it is purely *you* doing it and you getting something out of it for yourself.

Again, the choice of course was almost irrelevant and was likely to be chosen by means of elimination of alternatives rather than by positive choice. These students hoped that the social science course would help their understanding of everyday life. The broadening aims were summed up in their response to questions about their expectations of the course and what they expected to gain from it.

Well I except a better insight into the way other people—I think one tends to be very blased—you live your own life and that is the way it is. I'm hoping that I'll be able to see things from

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different points of view and not be too single minded about things; I hope at the end I'll be able to converse with people more easily without getting nervous.

Being at home it is easy just to go to coffee mornings and just to watch play school which are all right in themselves but it is not the end. I would hate to think of myself doing that this year, next year and the year afterwards — and also I would like to think that it might make me more interesting really — I want to feel that I've had an exciting day and I've learnt something today or read something today and so hopefully enrich me as a person.

#### Personal orientation — extrinsic

(Compensation)

Extrinsic personal orientation is seen most clearly where students are doing the course to test their own capability. They want to find out if they are capable of a degree and if so, to what level. These students are more concerned with grades and feedback than about the content of the course. This orientation again is prevalent in the O.U. It can be seen as a sort of compensation for the lack of further education in the past. Students' reasons for joining the university for this orientation are to do with a feeling that they have been deprived of opportunities in the past or incorrectly judged by the education system. Open University study is hoped to prove to themselves and to other people that they are capable of higher education.

It's something I've always wanted to do. For personal reasons between me and my parents I didn't go to university when I should have done. I've had a hankering ever since to discover whether or not I could have done it.

I suppose I want to prove something to myself. The one piece I have read said it was the most difficult way anybody had yet devised to get a degree and I thought — well, if I can do it at least it will prove something to me if to nobody else, and I'd like to.

Almost as soon as they start the course it becomes important to these students to succeed in passing the course, or at least in "studying the course".

It is important, yes, now I've started it is going to be quite important. If I feel that I don't suppose I had a challenge not ever probably not for me to have to do myself so it is important I have to prove, perhaps to myself that I can stick to it and do it. It is important, but just to me.

I'd say fairly important — I feel it's going to be the only chance i've got to do this and if I drop out of it I won't get another

chance, not in the foreseeable future and by then it will be too late.

Personal satisfaction, .... It won't help me with my job, I don't intend to go marching off in six or seven years time clutching my B.A. and demanding a super job somewhere. I just want to do it and see what happens.

#### Social orientation

This category is characterized by students who appear to have social aims which influence the way they go about working:

Put it this way, I would have gone to university anyway — it was irrelevant which course.

The outside activities that I do — (radio and film unit and sport) are very important. There is a lot to do outside and in some respects I tend to put off work because of them. If there's something to be done I'd rather do that than something else. Then I try to keep it balanced — from the point of view of university education — this side of it is just as important as the academic side, and if not — more important I suppose because you can always study in a correspondence course or something like that but you can't get this kind of social thing and development anywhere else.

Social orientation appears to be extrinsic almost by definition; as it cannot be related to the course itself. But students often have aspects of vocational or academic orientations as well. Social orientation seems to affect the decisions students make about how to spend their time and may mean that the course is allocated a certain percentage of the available time and social activities the rest.

Very few O.U. students show this type of orientation almost certainly due to the nature of the teaching — mainly by correspondence. However, some students place a high priority on tutorials because these provide an opportunity to meet people. The university life at a conventional university does, in contrast to this, provide numerous social activities, and at Surrey some students appeared to have these things in mind when they decided to apply to university.

# Case-studies of student learning

The focus of this chapter, the learner's world, develops a more holistic description of students' experiences of learning. Having described the importance of a context for learning, particularly a personal context, it is possible to develop a fuller picture of the learner's world.

In Chapter 3, the concepts of approaches to studying and conceptions of learning were introduced. These two concepts can be linked together with the concept of educational orientation to provide a framework for

understanding what a student gets out of a course. These interrelated concepts can be seen as increasing levels of generality for describing students' experiences of learning.

The two case studies that follow are extracted from a longitudinal study of 29 Open University Students. They will be used to illustrate the links between these concepts which have been found in the main study; i.e. integrate orientation to learning, conception of learning and approaches to studying. The case-studies are of students taking the Open University Social Science Foundation Course who were interviewed on three occasions (i) before the course, about their orientation to learning and conception of learning; (ii) during the course, about their approaches to studying one particular piece of teaching material and completion of an essay assignment and (iii) after the course, about what they had gained from the course, (Morgan et al., 1980).

The two case studies, which use pseudonyms to preserve confidentiality, have been selected to illustrate how students with different orientations go about studying in vastly different ways.

# Case study 1: John Williams

John Williams is a Personnel Officer working in a London firm. He is in his early forties married with two children. He has professional qualifications, and has previously attempted a degree course on a correspondence basis but the course did not fit in with his other commitments and he completed only one year. He felt however, that to get a degree would be a 'good thing' and when he heard about the Open University he decided to try again.

It seemed a good idea to take a degree — I'd heard of the Open University before but I was never quite sure how it operated. I'd tried before to do a degree — an external London but it was the time keeping really — it involved evening lectures and I only did the first year. This seemed like a fairly good way to have another attempt.

His main orientation seemed to be an academic extrinsic one and he described how he hoped to do the work quickly.

I don't really know how keen I'll get. I mean one would obviously try to do as little as possible; but obviously you're going to do a fair bit to get through it properly. — If I can get it concentrated down to as few hours as possible, commensurate with getting the degree and enjoying it, I will.

The emphasis in these statements is on efficiency and from the beginning John's concern with progress through the system was clear. There were also, however, hints of vocational intrinsic orientation where he talked about why he had chosen to study social sciences.

I think it was possibly because the sociology ones are more

related to the day to day environment things that I do—I don't think it will help me in relation to employment prospects because I think when you get to a certain age, you've either got a level of experience or you haven't. It may well help me because of a broader knowledge and applying or investigating routes in relation to personnel and industrial relations problems I hadn't thought of before, but I don't expect anything very startling, you know.

In our first interviews, besides orientation to learning, we also asked John what he thought learning consisted of. He replied as follows:

#### John:

I would say assimilation of common sense in relation to the course I was doing. Common sense which was related to sociology — as opposed to sort of parrot-fashion learning.

#### Interviewer:

What do you mean by common sense?

#### John:

Well it seems to me there are various theories which I found when I looked at the block in relation to unemployment, crime, there are various yard sticks social laws and rules of thumb that can apply, statistics, and these are obviously the basic guidelines in relation to those problems and one needs to know how to apply them and what they are.

John's conception of learning appears to parallel the intermediate Level 3 described in Chapter 3; "Learning is perceived as the acquisition of facts procedures etc., which can be retained and/or utilized in practice".

John's primarily academic extrinsic orientation and this procedural conception of learning links in fairly closely with his approach to study. This was characterized by a wish to do things in the shortest possible time, using strategies of note taking that were geared to getting out the main points of the units for easy revision.

When he was interviewed again, John was half way through the course and had settled into a routine study pattern which reflected his concern with efficiency. He was enjoying the content of the course and could talk about the concepts he was learning. The overwhelming impression of his approach to study was that it was a strategic one. He had learnt how the system operated and was working through the course in a way which was characterized by the minimum effort necessary to understand the main soints. He described how he studied as follows.<sup>2</sup>

I have a quick look and see how long I am going to take on it and then I just read straight through it and use the felt tip pen... I ring verious theories as I go through, I possibly go through it and I make a few notes on small cards on what the various theories are... What I tend to put down is the main points in each block, what the answers are in the main points of each block. To be quite fair about the way I am doing it, I suppose I am doing the minimal study to sort of achieve the end result and so from that point of view, my need is to have something which is more succinctly encapsulated and I use the cards in that fashion.

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I've been a bit naughty on it because I've worked out that you don't need to do all the assignments and I am just doing the minimum. It really means that I have got to get reasonable marks for the ones I am doing because I'm not getting the average to bring me up.

John is clearly going about studying in what was described in Chapter 9 as a strategic manner, and seems to be confident in what he is doing. In terms of *deep* and *surface* approaches to studying, he can be described as taking a deep approach. He is attempting to identify the "main points" in the Open University correspondence texts and summarize them more succinctly. However, he is doing this in a somewhat external, impersonal way or purely in a cognitive manner. This is not a deep approach in the "full sense" in that he seems to be taking short cuts to the main points, without apparently considering all the evidence. This way of studying can be seen as a rational response to the O.U. system, since students study part-time at a distance and have to adapt to considerable demands of the O.U. in terms of regular pacing of correspondence texts and assessment tasks. For John, his approach was successful in the sense that he was obtaining reasonable assessment grades, however, he was well aware that learning could be a more personal activity in other situations.

I think on some of the essay questions you have to go deeper and beyond the definitions in the block and perhaps try and read a bit and become more analytical and critical but this involves time, which is a precious commodity. I tend to concentrate on the middle course of getting what's in the block.

At the end of the course, in our third interview, we again asked John what learning consisted of.

John:

Well it certainly doesn't mean parrot fashion, I think it's understanding it...

Interviewer:

What is involved in understanding something?

John:

Well I suppose by understanding something, it's the ability to be able to read a theory and be able to explain it to someone who hasn't read it before and doesn't understand it, to be able to relate it to someone who is unconnected with the subject.

In terms of conceptions of learning we can make a tentative interpretation that John has changed from seeing learning as "gaining rules and procedures" to seeing it as "understanding and relating ideas together"; i.e., a change from Conception 3 to Conception 4 in terms of Saljo's framework.

In our third interview, although John had enjoyed the course, he felt that it was really only the basis for further in-depth studying.

I enjoyed it — it took up more time than I thought it would. I didn't have enough time to spend on it. I think you cover a lot of things reasonably superficially; you don't get into anything in any great depth and it's made me keener to get on to something at 2nd or 3rd level where you can study one subject and spend time on it.

This attitude appears to be a reflection of his predominantly academic extrinsic orientation—i.e. to continue on the educational ladder. However, his desire to study a subject "in depth" suggests a change towards an academic intrinsic orientation.

John's secondary orientation — vocational intrinsic — is also reflected in what he felt he gained from the course:

If I hadn't done the course I think I would have missed a lot of what I've learnt in relation to my work — about the psychology of work — whereas I was inclined to take a decision fairly quickly on certain things, now I do have a certain experience having studied a bit of psychology and sociology and I do try and perhaps see how things are going to inter-relate and affect people — spend a bit more time on it and be a bit more thoughtful than I was before.

From this last quote, we can see that taking the course had affected John's approach to his work and that he was seeing the relevance of the course material to his everyday life. It would be interesting to follow this student through more years of studying to see if this personal meaning extended into his orientation and conception of learning in future years.

Integrating the concepts of educational orientation, conceptions of learning and approach to study provides a framework for understanding John's experience of learning. His primarily academic extrinsic orientation links to his strategic way of studying, and taking a deep-approach, although in a rather external and impersonal manner. His approach is consistent with a conception of learning based on using rules and procedures. The links between concepts exists both logically and, as this case-study shows, also empirically. By the end of the course, from his perceptions of gains from studying and how he sees studying developing in the future, we can detect some change in John's orientation. He seems to be moving towards vocational intrinsic orientation with some academic intrinsic orientation. The following table summarizes these links and changes.

TABLE 10.2

John Williams: a case study

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Educational orientation (before the course)	Conception of learning (before the course)	Approach to studying (during the course)	Educational orientation (end of the course)	Conception of learning (end of the course)
Academic extrinsic — academic progress, good grades — minimum effort: secondary vocational intrinsic	"gaining rules & procedures" — Saljo's Level 3	deep- approach — strategic	Academic extrinsic — clearly emerging vocational and academic intrinsic orientation	"understanding and relating ideas together" — Saljo's Level 4

# Case study 2: Sally Brown

Sally Brown is a housewife in her mid-thirties with two children of primary school age. She had taken an 'O' Level in English at night classes some years earlier but apart from this, had no qualifications, and had not studied since leaving school. The impetus to apply to the Open University had come from her father who was half way through an O.U. degree and had passed on information to her.

Before the course started, Sally talked about her reasons for studying. She appeared *not* to have an intrinsic academic orientation, since she had no specific interest in the subject discipline:

It wasn't really particularly for any of the subjects, ... because I think that once you get started you can get really into doing it, hopefully.

She had vague concerns that in the future a qualification might be useful to get a job (vocational extrinsic orientation).

Apart from providing me with an interest now it might be useful to me, sort of later on when the children get older.

There was also some indication of a personal extrinsic orientation.

I didn't get much academic qualification at school...!'m testing myself to see what I can do... I want in a way to prove to myself that I am capable of doing the work because I've never really done anything as an individual.

But the overwhelming impression Sally gave was of a strong personal intrinsic orientation.

I'm hoping that it will give me more confidence in myself and to actually be able to cope with different situations and life in general. I feel that I need something and hopefully this is going to broaden my outlook... a sort of greater insight into the way other people live and the way other people think. I think one tends to be very biased. You live your own life. I'm hoping that I'll be able to see things from different points of view and lead to more tolerance really of different kinds of people and different kinds of groups... and to play a more active role in society instead of always being the one who sits back and does nothing. I think if you could understand it more what causes some problems you could sort of perhaps react to it in a better way, and hopefully sort of perhaps help others to do the same but I don't know whether it will really make any difference.

The main reason for doing the course for Sally was to relieve the boredom of being at home all day. She also felt a lack of confidence in herself generally and hoped that the course would change her into a more accomplished and competent person.

She had chosen the course, partly through a process of elimination, and partly in the hope that the content would be relevant to her own life.

I thought that, reading through the description of the course, it sounded quite interesting and would teach you more about life in general and the way that things arise. You hear about so many different things on the television but you don't seem to really understand what they are talking about. I thought this would be a very useful course to take.

At the beginning of the year Sally was very anxious about her own ability to cope with the course and although she wanted to become more competent in social situations, she was rather frightened by the prospect of tutorials and the compulsory residential Summer School. It was clear that the course was going to be a considerable challenge for her.

She had no experience of post-compulsory education and appeared to have a somewhat unreflective, taken for granted conception of learning (Conception 1).

#### Interviewer:

When you say learning, what do you mean by learning, what do you think of?

#### Sally:

Um... (laughter)... Learning? Don't know really...

#### Interviewer:

Can you describe what learning is?

# Sally:

Gaining new knowledge of different subjects, you know . . . um . . .

This response was quite unlike the rest of this interview where she was far more articulate. She appeared to take the question seriously and to say all she was able in response. So on the one hand, Sally had a predominantly personal intrinsic orientation which one might expect to be accompanied by an understanding of personally meaningful learning, but on the other hand she actually gave an unsophisticated response to our question about the nature of learning itself. When we interviewed Sally about her approach to studying half way through the course, she revealed a slightly confusing picture. Her way of describing her studying sometimes indicated a surface approach.

I have got the time, but I find it difficult to concentrate. I sit in here and sometimes don't do anything really. I have got all the work there but it doesn't go in.... I think it is easy to to do them (the multiple choice questions) as you go along,... I tended to skim rather than reading it all properly and I don't feel at all that I have taken all this block in. I just don't... I mean it shows how well I read it because I can't remember half of what it said. I read it very quickly and usually I read it maybe two or three times because I don't think you take it all in at first reading.

Similarly, her description of note taking indicated a surface-approach and can be linked to her "taken-for-granted" conception of learning.

Sometimes I underline bits — I underline things that I think are particularly important. I don't make notes very often — but because I am so bad at it, I've got this book and it's got all the bits and pieces in and various odd notes from different parts. And I decided that I wasn't doing very well at this so that is why I decided to keep it more in the Blocks themselves. I'm not very good at taking notes — they are all a bit of a muddle really.

Her problems with study techniques, note-taking for example, and dealing with the vast quantity of printed material supplied by the O.U., can be seen as partly a consequence of her conception of learning and also her lack of prior academic experience.

In other parts of this interview, Sally seemed to be attempting to take a more active and reflective approach to study. She planned her essays, didn't like going on to new subject matter until she had completed her essay in order to avoid confusion, carefully extracted crucial points from the text, and so on. At one point in the interview she described an *outcome* of her learning which reflected her intrinsic orientations:

I think it's very interesting already when you watch the news and different things, the things they say seem more relevant now. They use the words that perhaps I wouldn't quite have understood before and having done the work, things tend to click... whereas I used to think that inflation was inflation before,

you relate it to different kinds now and the different policies that are put in. You see the differences between them better than ever I could before.

Contact with other students and the tutor at tutorials was very important for Sally and she found that just knowing that other people had the same sort of difficulties as she had, gave her the confidence to carry on. She also felt that passing the assignments had given her much needed encouragement.

I've done four essays now and I've passed them all, so I must be doing it adequately I suppose, but I don't feel awfully confident. But then, nobody else seems to either, so I don't feel too bad about it.

By the time the course was finished Sally presented an altogether more congruent picture. She distinguished between learning and memorizing.

#### Interviewer:

When you think of learning in general, what does learning mean to you, what does it mean to learn something?

#### Sally:

Well it certainly isn't (laughs) learning everything that's in those books. I couldn't remember half... it's a hard thing to define really. I think it's understanding more than learning by heart — learning to be more critical of things — just really broadening your outlook on things — sometimes you don't think that you've actually learnt it but all the time it keeps cropping up... you know, you're looking for more in life and you keep thinking of things like Maslow's hierarchy of needs and things like that.

So that after the course her conception of learning fitted very well with her dominant personal intrinsic orientation to study. She was even using ideas from the course to explain her own attitude to learning or needs from the course. This reflexivity shows an active approach to learning. Sally felt much more confident in herself. She had passed the course and was feeling much more positive about her ability to study. When she talked about the gains from studying the course we can see how they are related to her personal intrinsic orientation—being changes in her own ability and confidence, new interests and broader knowledge.

I feel different somehow, I feel much more confident and I think I'll be much happier next year. I don't think I will worry quite as much.

She also said that the course had changed her approach to life.

Well, I think it teaches you to be more broad minded — you don't think that you are narrow minded but you realize that you are

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when you learn things — well it's difficult to think of examples but like — unemployment — in the past I was inclined to think that some people didn't want to work, they just couldn't be bothered and preferred to be on the dole — you tend to see the other side of the coin. I've learnt to be more critical, watching T.V. programmes you learn to be more objective to look at both sides of an argument. I argue with people now, you know. — I'm not afraid to come out with an alternative view.

Again, as in the previous case study, integrating the concepts of educational orientation, conceptions of learning, and approach to studying enables us to build up a picture of Sally Brown's world as a learner. There is a clear link, both logically and in terms of her own descriptions between her personal intrinsic orientation to learning and her perceptions of gains from the course — her descriptions of an increase in confidence and seeing the world differently. In commenting on the details of how she tackled particular learning tasks, she described an active and thoughtful approach—planning essays, working on one topic at once. However, many of the details of her studying, for example, note-taking, seem to be constrained by her initial conception of learning. By the end of the course she had clearly changed in her conception of learning, from seeing it as "new knowledge of different objects" to "understanding.... broadening your outlook". With this more sophisticated conception of learning, we would expect her to take a deep approach to studying more consistently. The following table summarizes Sally's experience of learning in her first year of O.U. study.

**TABLE 10.3** Sally Brown: a case-study

Educational orientation (before the course)	Conception of learning (before the course)	Approaches to studying (during the course)	Educational orientation (end of the course)	Conception of learning (end of the course)
Personal intrinsic — self development, gain confidence: Secondary personal extrinsic — proof of capability	Learning as gaining new knowledge Saljo's Level 1	Surface- approach — appeared to be attempting a more active approach	Personal intrinsic — perceptions of gains seen as changing her approach to life	Learning as  "being critical and relating ideas to one's own experience" — Saljo's Level 5

#### Conclusion

The case studies provide two examples of descriptions of the learner's world. By relating together the concepts of educational orientation. conceptions of learning, approaches to study and outcomes of learning. we can develop a conceptual framework which is grounded in students' experiences of learning. The evidence is, of course, not limited to the two case studies: we are drawing on the whole sample to provide many other instances of connections between these concepts.

We have established that educational orientation provides a useful construct for understanding a student's personal context for study. It encapsulates the complex nature of a student's aims, attitudes, purposes for studying. Moreover, educational orientation is not an invariable property ascribed to a student. It describes the relationship between the Individual and both the course of study and the institution—it can change and develop over time. As we saw, John Williams developed, during the O.U. foundation course, towards a vocational intrinsic orientation with some indications of academic intrinsic orientation. Before the course, these orientations were hardly discernible.

Educational orientation is an important construct as it contributes to our understanding of what students learn. Besides the qualitative differences in learning outcomes described by Dahlgren (Chapter 2). which focus on the variations in how students understand specific concepts, students' overall perceptions of gains from studying can be understood in relation to educational orientations. Students' perceptions of gains from study, illustrated in the opening quotations to this chapter, can be related logically, and empirically to their educational orientations. The case studies of John Williams and Sally Brown demonstrate these relationships. We can see how their personal context of study has a powerful influence over how they approached studying and what they unined from the course.

Taking the case studies in conjunction with the descriptions of the main cutegories of orientation, it is possible to provide a view of learning from the learner's perspective in a fully holistic way. The linkages between the major concepts will be explored more fully in the final chapter, but ulready the powerful influences of the student's idiosyncratic purposes in studying, and of the students perceptions of the learning context within the institution, are clear.

Many lecturers seem unaware of the very different orientations held by their students, and so, as we saw in Chapter 1, tend to blame students for laziness (or lack of motivation). They thus assume that there is a single rouson for being at university or college — to obtain the highest level of qualification. No doubt that was the lecturers' orientation: they almost **inevitably had, or developed, a strong academic orientation.** The research described in this chapter serves as a strong reminder that most students have a complex mixture of reasons for continuing their education, and few of them aspire to (or believe themselves capable of) the pinnacle of academic achievement towards which lecturers seem to believe they should be striving.

#### Notes

- 1. The Open University provides degree level education for adults studying part-time at a distance. There are no formal entry qualifications. The teaching materials consist of specially prepared correspondence texts, television and radio broadcasts, supported by face-to-face tuition at the local level. The Social Science Foundation Course is a "full credit" course extending over a nine month period. Six credits are required for an Ordinary Degree.
- 2. Further details of O.U. students approaches to study are described in Morgan, Taylor and Gibbs, (1982).

# CHAPTER ELEVEN

# Understanding Teaching and Teaching for Understanding

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#### Introduction

Until the early 1960's, teaching in higher education was a secret rite, taking place behind closed doors (Layton, 1968). It was little discussed and largely unstudied in any systematic way. Broadly speaking, that nituation no longer obtains. The prospect of academics thinking as hard about their teaching as they do about their research may remain a distant one (Becher, 1978), but the closed doors which Layton saw have been gradually eased apart by empirical enquiry and open debate. The study of teuching has become accepted rather than exceptional, and there are growing signs that the traditional reluctance of lecturers to engage in melf-evaluation and appraisal, though still widespread, is not universal. Most colleges and universities mount staff development activities of nome kind or other to help academics to reflect on and improve their teaching. And there is now a burgeoning array of books which deal generally with teaching in higher education (Beard, 1972; Hall and Cannon, 1975; McKeachie, 1978) or which explore the potentials and limitations of particular methods such as the lecture (Bligh, 1972; Brown 1978) or small-group teaching (Abercrombie and Terry, 1978; Rudduck, 1978) or articulate and argue for new approaches such as individualized Instruction (Keller and Sherman, 1974).

Yet while teaching itself has begun to be more vigorously and openly examined, the teaching-learning process as it is experienced by students has remained hidden from view. Instead, discussion has almost overwhelmlngly been centred around lecturers' perceptions of the teaching-learning process. It derives from the vantage-points which they occupy and it is concerned in the main with the activities in which they—rather than their students—are engaged.

This 'teacher-centredness' has had a number of consequences. The first of these is quite simply that while our knowledge of lecturers and of the part they play in teaching has grown substantially, students have remained shadowy and insubstantial figures, part of the background rather than the foreground of discussion and debate. Little has been known about how students respond to teaching, how they tackle the everyday demands of learning and studying, or what kinds of difficulties or problems they encounter. In short, the experience of students has been taken for granted rather than systematically explored.

As a corollary to this (and in spite of the value traditionally placed on

coming to know one's students as individuals), an understanding of what it means to learn from the student's perspective has not generally been seen as an indispensable or even desirable component of accomplishment in teaching. Instead, the principal focus of discussion has been the transmission rather than the reception of subject-matter, and the formal or semi-public activities of teaching in higher education: the lectures where the lecturer introduces students to an aspect of his or her discipline in a lucid and organized way; the seminars and tutorials where students are given an opportunity to clarify and deepen their understanding in the cut-and-thrust of discussion; and the practicals where students are encouraged to work through a structured set of assigned experiments or problems. Indeed, teaching expertise has been primarily associated with accomplishment in the lecture-hall or the seminar room, and staff development initiatives have tended to be directed towards improvement of this aspect of teaching performance. The problems of how or what students are expected to learn from lectures, seminars or practicals—and more particularly, of how students might be helped to maximize what they might learn in such situations — have remained largely unexplored or unaddressed.

A further and linked consequence of an emphasis on what we might call direct teaching situations has been a corresponding lack of emphasis on learning activities in which academics are only indirectly engaged. Such activities include background reading, report and essay writing, working through set problems, note-taking and revision. Lecturers' influence on these activities is often seen as confined in the main to prescribing the kinds and amounts of work to be done and, where appropriate, assessing it. But the chief responsibility for carrying out and learning from these activities is considered to rest with students. Such activities are thus widely viewed as playing an auxiliary rather than central role in the teaching-learning process, at base reinforcing and extending what students have assimilated from more formal teaching encounters. Indeed, the custom of referring to these activities under the umbrella term 'private study' underscores their separation from the mainstream of teaching as conventionally conceived.

It is therefore important to recognize not only that a knowledge of students and of learning has been substantially lacking, but also that this has meant that assumptions about what teaching entails and what the roles and responsibilities of a teacher in higher education are have sprung from a less than complete view of the teaching-learning process. In one sense, then, the present book can help to close the gap by offering an understanding of what it means to learn in higher education. But in an equally crucial respect, the unaccustomed vantage-point which it adopts also serves to challenge prevailing assumptions about teaching and learning. Hirst's argument that a definition of teaching is contingent or 'parasitic' upon a definition of learning (Hirst, 1971) applies no less forcefully to the ways in which teaching and learning are conceptualized. If our conception of learning is transformed by new knowledge, then our conception of teaching must also undergo metamorphosis. The contribu-

tion of these findings is thus not merely to extend our understanding of the teaching-learning process, but to change the ways in which that process is understood.

The purpose of the present chapter is to sketch out the foundations and implications of an experiential conception of the teaching-learning process, i.e. a conception which is steeped in the experiences and perspectives of both academics and students. A comprehensive review of the findings of earlier chapters will be undertaken in Chapter 12. Here the aim is to highlight main themes which spring from the findings, to suggest what these imply for our thinking about the teaching-learning process, and to illustrate the kinds of initiatives which might follow in consequence.

#### **Teaching for Understanding**

A signal feature of higher education institutions is the great and growing diversity of undergraduate courses and of the disciplines in which these are steeped. In each discipline, distinctive conceptual frameworks and procedures of analysis are brought to bear on a specific domain of subject-matter. No analysis of learning and teaching should fail to recognize this diversity and distinctiveness: the pedagogical problems of any one discipline are in certain respects unique. Equally importantly. nonetheless, if an analysis of learning and teaching is to have any general validity, it cannot remain landlocked in a specific subject domain. A core of mutual concerns and perspectives must be sought which arch across the disciplines and are applicable, to greater or lesser degrees, to most if not all of them. Chapter 2 provides telling illustrations of this issue in its most significant form: the search for criteria which capture qualitative differences in what we have called the outcomes of learning — in other words, what it is that students have gained from the experience of higher education. On the one hand, Chapter 2 shows how the uniqueness of course content must be recognized. The precise subject-matter of a learning task is confronted in arriving at a full description of learning Outcomes. On the other hand, differences can be identified which have wider relevance. A distinction can be drawn, for example, between outcomes which merely describe the content of a text or mention isolated parts of it, and those which are founded upon a recognition of the **relationship** between the evidence presented and the conclusion which the Ovidence was intended to support. More generally, and most fundamentally, we can differentiate between outcomes which represent understanding and those which do not.

This concern with understanding, allied to a sensitivity to subjectmatter, has been a thread which unites the various contributions to the present book. In different ways, each chapter has sought an overarching eriterion of what students have learnt in the distinction between learning which represents the memorization or reproduction of discrete pieces of information, and learning in which meaning has been grasped in a complete and holistic way. Equally, each chapter has shown that understanding cannot be taken for granted; it is a difficult and often elusive quarry. We saw in Chapter 6, for example, that some students may experience the relevance of the content of a lecture intrinsically, so that what they have learnt has become bound up with their own understanding of a particular subject or discipline. Others, however, may perceive the lecture content in a predominantly unreflective and extrinsic way, as something which has to be retained for assessment purposes. Similarly in Chapter 5, we saw how the meaning of a text may not be grasped because of a failure to perceive the interconnections between the specific content of the text and the overall message which its author was attempting to convey.

A concern with meaning and understanding is thus central to an experiential conception of the teaching-learning process, for the gap between reproduction and understanding represents a quantum leap in the quality of what has been learned. When the mastery of factual or procedural details—in many disciplines a vital cornerstone of understanding—becomes an end in itself, dislocated from meaning, then to have learnt is not to have partially understood but to have not understood at all. Moreover, as we have also seen, when something has been genuinely understood, it has been related by students to their prior knowledge and experience and it is perceived as helping them to make sense of the world around them. In its fullest sense, therefore, learning involves a change in the students' conception of some aspect of reality. It is an activity "through which the environment—or man himself—appears with a higher degree of meaningfulness than before" (p. 34).

This last point underlines the essentially intersubjective and constructive character of learning and teaching. Teaching is not an hermetic problem of 'transmission', nor is it, to use a term which has achieved some currency recently, a 'delivery system', packaging and conveying the commodity of knowledge to those who will merely consume it. In the opening chapter of his study of college students' intellectual development, William Perry (see Chapter 1) succinctly illustrates the problem in its most general form. Let us suppose, Perry says, that a lecturer begins his lecture by stating that he will consider three theories which have been advanced to account for a specific problem or phenomenon:

Student A has always taken it for granted that knowledge consists of correct answers, that there is one right answer per problem, and that teachers explain these answers for students to learn. He therefore listens for the lecturer to state which theory he is to learn.

Student B makes the same general assumptions but with an elaboration to the effect that teachers sometimes present problems and procedures, rather than answers, "so that we can learn to find the right answer on our own". He therefore perceives the lecture as a kind of guessing game in which he is to "figure out" which theory is correct, a game that is fair enough if the lecturer does not carry it so far as to hide things too obscurely.

Student C assumes that an answer can be called "right" only in the light of its context, and that contexts or "frames of reference" differ. He assumes that several interpretations of a poem, explanations of a historical development, or even theories of a class of events in physics may be legitimate "depending on how you look at it". Though he feels a little uneasy in such a kaleidoscopic world, he nonetheless supposes that the lecturer may be about to present three legitimate theories which can be examined for their internal coherence, their scope, their fit with various data, their predictive power, etc. (Perry, 1970, pp. 1–2)

These three hypothetical students, as Perry later makes clear, represent different positions in his scheme of intellectual development. The illustration thus highlights the interpenetration of learning and teaching, for whatever the lecturer then proceeds to do, Perry suggests, these three students will make meaning of the experience in quite different ways.

The teaching-learning process can thus be considered not as a matter of transmission, but rather as a meeting of minds where world-views confront and collide with one another. The success with which students are able to achieve understanding may therefore depend critically on the capacity of the higher education teacher to recognize and build from students' existing conceptions and to anchor new knowledge in a meaningful framework.

# Building from existing conceptions

The challenge of orienting teaching towards the conceptions of phenomena which students bring to a course is a formidable one. Indeed, the difficulties posed are more general ones which are also confronted by, for example, historians of science. As Hans Kalmus puts it in a recent article on the geneticist Gregor Mendel, it is:

the necessity to put themselves in the frame of mind of the scientist with whose achievements and ideas they are concerned. Perhaps the biggest obstacle for those entering into the thought system of a historical figure is the difficulty of "unthinking" an idea or concept which since the time of its discovery has become commonplace. (Kalmus, 1984)

For lecturers too, the central task may be to "unthink" an idea or concept and put themselves in the frame of mind of students who are encountering it for the very first time. In part, this may require the kind of empathetic understanding advocated by Carl Rogers (see Chapter 1). Yet the lecturer is not entirely in the same predicament as the historian of sclence. While the historian must rely upon informed and imaginative reconstruction, the lecturer has the possibility of trying to elicit and thus build from students' existing conceptions directly.

Two courses at the Open University offer indications of ways in which a knowledge of students' conceptions can guide teaching strategies. One is a course in Third World Studies (U204). Members of the course team

designing the unit interviewed prospective students about how they understood such terms as 'developing' and 'underdeveloped' country and what countries they would categorize as part of the 'Third World'. What the course team gleaned was therefore a more informed 'sense of audience' (Britton et al., 1975) which could underpin the design and drafting of the course unit. But there were two other consequences, reflecting the degree to which the course team was impressed by the task of examining students' conceptions directly. First, exercises were built into the start of the course which required students to articulate and analyse their own understanding of and attitudes towards the Third World. Only then were students asked to relate their own conceptions to the theoretical perspectives set out in the course materials. Second, one of the project options offered in the course unit was to carry out an interview study of the attitudes of a small social group towards the Third World. In effect, students could undertake the same task which the course team had undertaken, and so broaden their own understanding of the varying ways in which the Third World was conceptualized.

The second of the two examples is part of an Open University foundation course in the social sciences. The study described in Chapter 10 had provided detailed evidence of how twenty key concepts were understood by mature students new to social science. Capitalism was one of the key concepts, and the students' answers in research interviews to the question "Is Britain capitalist?" were subsequently written into the course materials. In a section of the materials entitled "Is Britain Capitalist Today?", a wide range of quotes from the interviews were followed by 'expert' comment. Students following the course unit were therefore encouraged to pursue understanding by relating their own ideas to those of the author.

A third example also grows out of research described in the present book. Chapters 2 and 4 discussed students' understanding of a physical phenomenon: what forces act on a car which is driven along a motorway in a straight line at a high constant speed? As the analysis showed, some of the answers the students gave represented an Aristotelian conception (of movement as effect) rather than a Newtonian conception (of acceleration as effect).

This question forms part of an investigation at Gothenburg University of engineering students' thinking and problem-solving in the field of mechanics. The main focus of the project is not on the development of teaching methods as such but on establishing the foundations upon which the content and method of teaching might be more closely geared to the needs of students. But although the project is still in progress, some of its preliminary findings on differences in students' conceptions of a range of physical phenomena have already had an influence on teaching.

One of the two lecturers responsible for the courses followed by students taking part in the project has used the preliminary interview findings to construct a test. The test made use of the questions asked in the interview study and concentrated on those physical phenomena where crucial differences in students' conceptions had been revealed. The

purpose of the test was not to achieve a more standardized or objective way of 'measuring' the knowledge of the students, but instead to obtain an overview, however sketchy, of the conceptions held by students embarking on the courses. On the one hand, the test had a diagnostic function, alerting and sensitizing the lecturer to students' conceptions. On the other, the questions it posed and the answers which the students gave could be directly incorporated into day-to-day teaching and openly discussed. The results of the test therefore became a part of the content of the courses.

The second of the two lecturers involved in the project made use of the results in a somewhat different way, by mounting group discussions which provided an introduction to central components of the course. Students were presented with the kinds of problems used in the interview study and were asked to discuss these in pairs. The students were then combined into large groups in which they presented their partner's response to a problem as they had understood it, and there was then a general discussion. In the general discussion, the teacher drew upon his awareness of differences in the students' thinking about the phenomena to identify, describe and review differences in conception.

These examples, as the discussion has indicated, have tended to rely upon a knowledge of students' conceptions already highlighted by empirical enquiries. Taken as a whole, therefore, they provide richer illustrations of ways in which courses may build upon existing conceptions than of how these conceptions might be elicited. Without this empirical starting-point, lecturers must seek pathways of their own towards a knowledge of students' conceptions. This will inevitably be a gradual process, but it need not be considered as a self-contained task. As the final example showed, structured group discussion offers a means of encouraging students to articulate and share their ways of thinking with one another and with the lecturer. Similarly, in the opening example students were given exercises which required them to make explicit and analyse their own attitudes and understandings. Eliciting and exploring students' conceptions can therefore become an integral part of the teaching-learning process. Seen from this particular perspective, to teach Is to engage with students in a collaborative quest for commonality of meaning.

# Anchoring knowledge in a framework of meaning

The second challenge of an intersubjective curriculum is to set what is to be learned in a framework of meaning. This is what Marris (1964) has called placing knowledge "in a meaningful context", which he saw as the essential function of lectures. Its importance as an avenue to understanding was exemplified in Chapter 6, "Learning for Lectures". By means of vivid illustrations which anchored new subject-matter in a recognizable reality, or through their infectious enthusiasm and commitment to their subject, lecturers helped students to experience the content of their lectures vicariously. Vicarious lecturing thus provided a bridge between extrinsic experiences and the intrinsic experiences of relevance which were associated with personal understanding.

This kind of anchoring can equally fruitfully be attempted in a variety of teaching-learning situations, as shown in an account of efforts by a group of tutors and curriculum development specialists at Sussex University to redesign part of an introductory economics course (Eraut, MacKenzie and Papps, 1973). Their initial response to the perceived shortcomings of the existing course was to devise self-instructional packages linked to lectures, tutorials and group discussions. But students' manifest lack of enthusiasm for the packages led to reappraisal, and so to a quite different way forward. The turning-point was the Demand Theory package, an analysis of the Brighton housing market. This had been seen as a complex problem to which students could relate the basic economic concepts of supply and demand.

Whilst students appeared to get very little out of the Demand Theory Package, the members of faculty who prepared it felt that they had learnt a lot from having to sort out their ideas: and it occurred to them that the 'sorting out' process might be more important than the subsequent learning. Perhaps the students could also be involved in formulating the problems, clarifying the assumptions about the situation to be studied, choosing the analytic techniques and disentangling value judgments and empirical judgements. (Eraut et al., 1975, p. 24)

The result was a series of two-hour discussions, on topical issues such as 'Should British Leyland give their workers £10 a week more?'. The discussions were deliberately open-ended and free ranging, with the tutor taking the role of chairman rather than chief discussant. Students' reactions to the discussions were strongly enthusiastic:

For the first time it was they who were being asked to 'sort the problem out': and the relationship between empirical judgements and value judgements could be talked out and made explicit. Moreover, they were being treated as economists rather than as novices, so it became possible for them to acquire some confidence in the value of their own personal judgement. Previously it had been assumed that the most difficult aspects of learning economics were the concepts and techniques, and that their application would arise naturally. Now it seemed that the reverse might be true. The process of analysing economic problems and deciding which techniques were relevant was the most difficult thing to acquire. Once that had begun to take root the learning of concepts and techniques became less difficult''. (Eraut et al., 1975, p. 25)

As the authors themselves recognize, the change of strategy had far-reaching consequences. One was to see the 'systems approach' which had been their initial guide as only spuriously student-centred. This approach, they conclude, seldom involves trying to discover what

students' main concerns and problems actually are, since testing and consultation takes place only within a tightly predetermined framework. The second consequence was a recognition of the implications of intersubjectivity. As the student pursues learning, taking part in tutorials and writing essays:

"Somehow it is always the subject-matter being fed to him rather than him feeding on the subject-matter. If any real competence is to be attained it is essential for the student to construct his own personal version of the discipline". (Eraut et al., 1975, p. 33)

Thus far we have been concerned with how tutors can foster the pursuit of understanding. Our focus of attention has been chiefly upon the content of learning and teaching, and we have stressed the importance of acknowledging its intersubjective and interpersonal character. Yet as Bruner (1966) reminds us, a curriculum reflects the nature not only of knowledge and of the knower but also of the "knowledge-getting process":

A body of knowledge, enshrined in a university faculty and embodied in a series of authoritative volumes, is the result of much prior intellectual activity. To instruct someone in these disciplines is not a matter of getting him to commit results to mind. Rather, it is to teach him to participate in the process that makes possible the establishment of knowledge. We teach a subject not to produce little living libraries on that subject, but rather to get a student to think mathematically for himself, to consider matters as an historian does, to take part in the process of knowledge-getting. Knowing is a process, not a product. (Bruner, 1966, p. 72)

In the next section of the chapter, we turn from content to process, from the 'what' to the 'how' of learning. This is a shift of emphasis rather than a substantive change. Content and process are complementary and interrelated aspects of the experience of learning and teaching.

# **Teaching Students How to Learn**

If one thread common to the preceding chapters has been a concern with learning as understanding, a second and no less important thread has been a concern with the pathways along which understanding is pursued. In Chapter 3, a fundamental difference was described in students' approaches to learning. The distinction drawn was between a surface approach, which involved a passive and unreflective attempt to memorize and reproduce a text, and a deep approach, where there was an active after to grasp the main point or message which the content of the text was intended to convey. In a surface approach, what was to be learned was interpreted as the text itself. In a deep approach, the text was seen as the means through which to grapple with the meaning which underlay it.

These differences in approach, Chapter 3 further demonstrated, were functionally related to learning outcomes.

Although derived from studies of learning from reading, this basic distinction has been shown to have a much wider relevance as a means of identifying and describing differences in students' approaches to learning and studying. The distinction underpins the meaning and reproducing orientations to studying discussed in Chapter 9, and it is closely complemented by Svensson's parallel distinction between holistic and atomistic approaches (see Chapters 3 and 4), which places relatively greater weight on the organizational as opposed to the referential aspects of students' experiences. The deep/surface distinction is also mirrored in the intrinsic and extrinsic experiences of relevance examined in Chapter 6, and it has been a strong influence on the derivation of the conceptions of essay-writing explored in Chapter 7. And as Chapter 10 makes clear, there are evident links between students' approaches, their conception of learning, and their wider educational orientations. Yet despite the striking conceptual affinity between these various descriptions of how students go about learning, it should be stressed that the differences between them are not fortuitous but reflect the many-sided complexity of learning itself. One aspect of this complexity stems from the idiosyncrasy of the discipline and the course. For example, Chapter 9, "The Context of Learning", shows that the distinction between deep and surface approaches is not invariant but takes on different meanings in different disciplines: a deep approach in the humanities, for instance, is typified by an intention from the outset to re-interpret the learning material in a personal way, while in the sciences, an initial concentration on details is often indispensable to a deep approach. In a similar vein, Chapter 7 presents an analytical framework through which critical differences in students' conceptions of essay-writing can be described and analysed, but the distinctive pattern and substance of the conceptions identified in this particular instance are of course functions of the discipline and course examined. In other words, these distinctions can be powerful tools in developing and supporting tutors' understandings of the learning of their own students, but they do not amount to rigid blueprints.

A second aspect of the complexity of learning is the particularity of the demands of specific tasks and activities. We have already reviewed, for example, the way in which learning from lectures can be fruitfully examined in relation to students' experiences of the relevance of lecture content, and other chapters have carried further the investigation of specific tasks. Thus Chapter 5 adopted a communication perspective to demonstrate that if the meaning of a text is to be apprehended, the learner must provisionally accept the premisses of the text's author and try to reconstruct the message intended. Chapter 7 drew attention to the interplay in essay-writing procedures between a student's emergent interpretative stance and the organization and selection of essay material. The procedures of essay-writing were thus shown to echo students' conceptions of the nature of an essay in History. And in Chapter 8, we saw how an alliance of the constructs of approach and learning style

disclosed the global and localized forms of procedures and descriptions characteristic of problem-solving as a learning activity.

These descriptions of students' experiences compel recognition of the heterogeneous and exacting requirements of learning activities. They Indicate that any teaching-learning situation is as demanding of students as it is of tutors, and they serve to challenge the conventional relegation of private study to an auxiliary and reinforcing role. An experiential conception therefore in part inverts the traditionalist focus upon formal teaching situations and instead invites us to consider the teaching-learning process as a panorama of learning tasks. This inversion has an important consequence: the change of vantage-point prompts us to see as problematic what might formally have been taken for granted. As a research perspective, it has provided abundant evidence that many students adopt approaches which are inappropriate to the achievement of understanding. As a perspective upon teaching, it suggests strongly that lecturers should take a more active part in helping their students to learn how to learn. Before exploring possible initiatives, however, learning must also be considered in relation to the individual student or learner.

# Learning and the learner

A fuller understanding of the approaches students adopt can be sought by means of a frame of reference wider than the learning task or activity: the **Institutional** setting (which will be discussed later), or the student as an **Individual** learner. In Chapter 3, to take one example, it was shown that **five** distinct conceptions of learning could be identified, ranging from a conception of learning as a quantitative increase in knowledge to one of learning as an interpretive process aimed at understanding reality. These differences in the meanings which individuals gave to learning were also **found** to be associated with their approaches to an experimental reading task. A second construct which focused upon the individual student was that of educational orientation, delineated in Chapter 10. Four orientations — academic, personal, vocational and social — were distinguished, each taking either an intrinsic or an extrinsic form. These educational orientations, alongside approaches and conceptions of learning, provided **a** framework of analysis which made it possible to consider the individual student in the round, as well as the interconnections between the three sets of constructs.

These qualitative differences in conception and orientation clearly also have significant implications for attempts to help students to learn. Chapter 3 provided evidence of the difficulties of fostering a deep approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within the confines of a single experiment. Even within an approach within a single experiment.

### Learning-to-learn

To recognize that students might need and can benefit from help with the demands of studying is not necessarily to know how one might set about helping them. There are probably many tutors who would echo the sentiments of a lecturer cited in an Australian study:

I do have this feeling that many (students) would blossom with a bit of attention but they can't get it from me. Even my graduate students still ask me how to study—I can't tell them, but sometimes I think I should be able to. I can only pass on what worked for me and that was 30 years ago. (Frederick et al., 1981, p. 85)

Where a knowledge of how students might be assisted is lacking, the natural recourse is to rely upon the many study skills guides and manuals which college and university bookshops routinely stock. Typically, such guides have tended to recommend specific techniques or methods of studying which students should master and adhere to. Yet the study techniques advocated are often of limited value and may sometimes be misleading or even harmful (see Gibbs, 1981, for a fuller discussion). Only seldom do such guides respond to the issues which have just been raised above: the demanding particularities of individual learning tasks, the critical and distinctive influence of the specific discipline and course setting; and the wider perspectives which individual students bring to their everyday learning. A strategy for reading, for example, may be recommended without consideration of whether to read in search of essay material is equivalent to reading an article which will be the focus of an extended seminar discussion; or whether a metallurgy textbook, a research monograph on social psychology, or the collected poems of Goethe might vary in the demands they place on the reader; or whether the inner logic of the strategy suggested might be at odds with students' notions of what learning means as an activity. No less importantly, and almost without exception, study manuals are not grounded in an informed understanding of students' experience of learning. Their advice is idealized and often unrealistic (Gibbs, 1981).

Nonetheless, side by side with a growing questioning of conventional guidance in 'study skills', there has been an increasing number of recent attempts to develop more appropriate 'learning-to-learn' strategies (Hounsell, 1979). The change in terminology is deliberate. While the former tends to stress the acquisition of skills and is concerned with means or techniques, the latter emphasizes an awareness of purpose and is concerned with ends and the individual's relationship to those ends.

Consider, for example, the following extract from a very recent guide to studying by Marshall and Rowland (1983):

This book focuses on you — who you are and what you bring to your learning. Throughout the book you are encouraged to examine your purposes and what you want to learn. You are also encouraged to look

at how you learn informally, and to build on this self-knowledge in your formal learning. Implicit in this approach are the beliefs that there is no one way of learning which suits everyone and that it is your right and responsibility to shape your own learning . . . Within each chapter you'll find questions and ideas about you as a learner. These are intended to centre the book on you and to help you discover your own purposes and methods for learning. Because the questions are based on the premiss that only you can answer them, we don't prescribe one 'best' way of learning, but instead suggest alternative study techniques. We give reasons for these techniques so you can decide how useful they are for your purposes, and we encourage you to try them as you actually learn and study to find those which suit you . . . (pp. x-xi)

The tenor of this passage contrasts sharply with the directiveness and rigidity of many conventional study skills manuals. The book as a whole reflects a concern with students as individuals, a recognition of diversity in purposes and strategies, and a sensitivity to subject differences. Advice on reading, for example, is focused around five purposes in reading a book: for entertainment; to gain an overall impression of its contents; to locate a specific idea or discussion; to familiarize oneself with its central concept or theme; and to understand the whole book in detail.

This pronounced shift of strategy is echoed in other recent publications. A guide to essay-writing by Clanchy and Ballard (1983) is explicitly geared to the social sciences student and starts from a discussion of what lecturers generally expect from essays. Marland and others (1981) have whown how a framework of 'question-steps' can help raise pupils' and teachers' awareness of what is entailed in assignments involving information-handling, and Raaheim and Wankowski (1981) have presented a wealth of insights which can underpin learning-to-learn strategies in higher education.

The most tangible aspect of this shift in strategy however has been in terms of approaches to group-based activities (see for example Hills, 1979). A thoroughgoing and pioneering example is provided by Gibbs (1981) who has mapped out procedures for a series of workshop exercises and articulated the rationale from which they stem. To take one of the group activities as an illustration, students are given two contrasting essay unswers (see panels 11.1 and 11.2) to the question "Assess the noise pollution problems caused by Concorde around airports". One answer embodies a deep and the other a surface approach to the question assigned (Gibbs, 1981, pp. 34-39). Each student is first asked to study the two essay answers and make a personal assessment of which is the better essay, and why. Then, through discussion in pairs and subsequently in fours, students compare their responses to the essays and are invited to reflect on the differing intentions which underlie the two essays. The aim Is not to arrive at a single 'correct' judgement (indeed, academics doing the exercise rarely achieve consensus) but to explore the variety of goals and crieria embodied in responses to the essays.

# PANEL 11.1 Essay Answer 1 (from Gibbs, 1981)

The sound limit at Kennedy airport, New York, is 112 PndB\*, and at Heathrow, London, 110 PNdB. The manufacturers of Concorde (Sud-Aviation and the British Aircraft Corporation) have promised that Concorde will range between 104 and 108 PNdB, depending on its weight at take-off.

At the start of Concorde operations at Heathrow, 21 of the first 35 departures exceeded 110 PNdB, and in the first eight months of operations 72% of the 97 departures exceeded 110 PNdB. Overall in 1976 there were 109 infringements of Heathrow's limit by Concorde. These measurements of Concorde were about 7 PNdB lower than during its early endurance trials. At the same time there were 1,941 infringements by subsonic jets. Concorde rarely features in the list of the ten noisiest take-offs each month at Heathrow, and subsonic aircraft at Kennedy have been recorded at 121 PNdB — twice the limit.

At Dulles Airport, Washington, Concorde has averaged 119.9 PNdB at take-off and 117.8 PNdB on landing. This is 12–13 PNdB higher than the averages for subsonic aircraft. The noise levels have been going down, and with them, the number of complaints. In September 1976 the average level was 121.3 PNdB and there were 186 complaints (29 of these to one take-off). In October the average was 117.4 PNdB and there were 101 complaints. During this time polls of opinion concerning Concorde's trial period at Dulles showed an initial opposition of 36.9% drop to 26.2%. In New York, opposition to Concorde landing at Kennedy has dropped from 63% in January 1976 to 53% in April 1977.

While 500,000 people are affected by aircraft noise in Washington, 2,000,000 are affected at Kennedy. It has been estimated that 40,000 extra people will be affected by noise if 80 Concordes serve 12 US cities. This represents a 1% increase. Bumps in the runway at Kennedy force Concorde to take off closer to heavily populated areas, but due to advanced flight control characteristics Concorde can begin to bank at an altitude of 100 ft. compared with an average of 480 ft. for subsonic aircraft, and so can turn away from heavily populated areas sooner after take-off.

\* PNdB means Perceived Noise Decibels - a logarithmic scale of noise

Rather than inculcating rigid techniques, therefore, Gibbs' aim is to promote in students a questioning, self-analytic attitude to studying. Students are encouraged to articulate their own perceptions of study demands and to pool knowledge of the strategies they have developed in their everyday studying. Above all, the emphasis is on clarifying and exploring intentions and purposes—key determinants of students' approaches to learning, as our research has clearly shown.

Gibbs' approach to learning to learn therefore responds to two of the issues raised above, while leaving a third, the requirements of specific

Opposition to Concorde based on arguments concerning noise pollution takes two main themes. The first is concerned with the 'sonic boom'—a phenomenon of supersonic flight *unique* to Concorde amongst commercial aircraft. The second is concerned with noise levels around airports caused during take-off and landing. This second theme is common to all aircraft, and the issue at stake is whether Concorde is significantly noisier than subsonic aircraft.

Comparisons with other aircraft are complicated by the changing nature of jet fleets. Early jet aircraft (e.g. the DC8 and 707) used turbo-jet engines, and whilst these have been quietened, they are much noisier than second-generation fan-jet engined aircraft (e.g. DC10 and jumbo 747). Eventually these older aircraft will be phased out, but at the moment Concorde is being compared with them.

There are also problems of measurement. Objective measures (meters giving a reading in decibels) cannot give any impression of 'shrillness' or subjectively experienced nuisance. An aircraft giving higher decibel readings may not be experienced as 'noisier' by someone hearing it take off. Subjective measures also involve problems, as 'noise' is such a multi-faceted phenomenon, and different people use different criteria in assessing it. There are dangers, also, in questionnaire surveys of reactions of people living around airports. Average ratings of 'nuisance' change over time without any changes in objectively measured decibel levels or frequency of aircraft movements and so other factors must be involved. These factors can be political. Boeing took care to sub-contract for parts for its SST at factories surrounding Kennedy airport, so that votes concerning whether SST's should be allowed to use the airport would be influenced by residents' concerns for their jobs! Workers at Filton and Toulouse would hardly try to han Concorde landing near their homes, however noisy it is!

Finally, there is a variation in recorded noise levels dependent on the skill of the pilot, and load factors of the aircraft. Subsonic aircraft have been measured at twice the legal noise level, struggling to take off with heavy loads in adverse conditions. Concorde has been flying under-loaded, with skilled pilots, who have even been reported banking away from noise monitors.

Given this variety of problems, it would seem likely that Concorde causes even more noise pollution than data suggests, and that in comparison with subsonic jets will become comparatively worse as time goes on.

disciplines, largely untouched. That is hardly surprising in a book directed at lecturers generally, nor is it difficult for any lecturer—as many have already found—to tailor the activities described to a specific disciplinary or curricular framework, or to devise new activities which reflect the spirit of Gibbs' approach. Indeed, its strength is to demonstrate how learning might be explored, and not to prescribe how it should be pursued.

This still leaves untouched the issue of individual guidance. Our research findings have prompted questions—about the quality of current procedures for monitoring student learning and providing individually directed guidance—which can only be briefly raised rather than treated thoroughly here. Coursework assignments represent an arena of learning where feedback is likely to be at its fullest and most penetrating, yet as Chapter 7 indicated, some students may fail to grasp the import of their tutor's comments, even in a course setting where such comments are more than usually attentive. In fact, we might observe that there has been virtually no systematic study of the efficacy of comments on written work as a form of feedback; and one informal survey (Mackenzie, 1974) points both to the cursory nature of some tutors' comments and to a wide variation between tutors in the depth and scope of comments made.

The author's own recent experience of counselling social science and arts students with essay-writing difficulties suggests that essay comments may sometimes amount to summary judgements rather than specific diagnoses. A student may be informed that an essay is "poorly structured", or that "you fail to make your points as clearly and as tellingly as you ought", but not be shown in what respects the essay content lacks structure or cogency. Or a student may be urged to "make a plan before you commit your thoughts to paper", but the more fundamental issue, of precisely what it is the student should be planning (c.f. Hounsell, in press), is not addressed. The nub of the problem is what Bruner (1966, p. 151) has described elsewhere as *telling* out of context rather than *showing* in context. No less importantly, well-documented comments may make the diagnosis readily comprehensible, but the gulf which lies between diagnosis and remedy remains unbridged, and for some students, unbridgeable without sustained support.

To conclude this section of the chapter, a major challenge for lecturers is to seek ways of more firmly integrating guidance on learning into everyday teaching. That is not to argue that study counsellors and specialist advisers have no role to play. But the chief responsibility for teaching students to learn the fundamentals of what Raaheim (1981) calls 'academic discourse' should lie with tutors themselves. For they are the subject specialists, who know best the complexities of their discipline, its characteristic modes of analysis and discourse, and the special demands it makes of its practitioners. Learning-to-learn is not merely redemptive (Roueche and Snow, 1977), an optional adjunct for the weaker student, but something from which all students can benefit. As Chapter 9 showed, perceived good teaching—and particularly, help with studying—is strongly associated with an orientation by students towards meaning and understanding. As a fully integrated part of an undergraduate course, learning-to-learn can contribute to the quality of student learning.

# Creating a Context for Learning

Skill in learning, as Lennart Svensson reminds us in Chapter 4, is not equivalent to skill in studying. In coming to a full understanding of the

experience of learning, it is also necessary to consider the course and institutional contexts in which learning takes place.

The contextual dimension of learning has been the third of the threads which weave together the fabric of this book. A knowledge of students' perceptions of course setting was an important backcloth to understanding learning in lectures and in essay-writing, while in problem-solving, as we saw in Chapter 8, students' approaches were almost wholly governed by their responses to the task in its educational setting. But it was Chapter 9 which dealt directly with the theme of context, disclosing its pervasive influences upon students' experience of learning. The chapter drew attention to critical differences between subject areas in the weight given to contrasting learning styles and in the varying guises which deep and surface approaches typically assumed. It provided evidence of strong associations, across a spectrum of disciplines, between students' orientations to studying and their perceptions of assessment, of workload, of the quality of teaching and of the degree of choice over content and method of study. And it demonstrated how students' approaches to a specific task could be frustrated or facilitated by interest and prior knowledge, and how overloaded syllabuses and inappropriate forms of assessment could push students towards rote-learning and reproduction.

This searching analysis of the context of learning has several important implications for an experiential conception of the teaching-learning process. In the first instance, as is noted in Chapter 9 itself, it indicates that the strength of students' commitment to pursuing understanding may be just as much a function of their experiences in a particular course netting as of any individual qualities which they bring to their academic studies. It is therefore misleading and unjust to attribute poor academic achievement to inherently 'weak' or 'unmotivated' students. Interest, commitment and approach are products of the interaction between ntudent and situation. Second, to view the 'impact' or 'effectiveness' of teaching solely in terms of teaching methods or the quality of their execution by lecturers, as countless studies of undergraduate teaching have tried to do, is narrow and inadequate. Student learning is subject to a dynamic and richly complex array of influences which are both direct and indirect, intentional and unintended. This web of influences spans assessment procedures and course content and structure as well as teaching, and it takes in lecturers' perceived commitment to teaching and their readiness to help with study difficulties as well as their degree of mastery of teaching methods.

It follows too, as Paul Ramsden makes clear in Chapter 9, that any initiatives which flow from an understanding of context must proceed along a combination of paths and recognize that lecturer's perceptions are not necessarily the perceptions of students:

It is useless, for example, simply to tell students that verbatim reproduction of information in an examination is wrong, to expect this warning to discourage surface approaches, and to blame the students when it does not. If students feel that there is insufficient time to study

the examined topics properly (perhaps because of the demands of other courses), or if they have experienced inadequate teaching, or if they are given high marks for reproducing lecture notes, or if their previous knowledge within the area is insufficiently developed, then they will feel constrained to use surface approaches. (p. 163)

Lecturers can try to provide greater freedom in learning, exercised within a defined and supportive framework that does not grant the anxious student too much autonomy too suddenly. When they plan their courses and devise assessment questions, lecturers can make strenuous efforts to avoid seeming to demand surface approaches or to reward students who adopt them. And lecturers can do more to help students improve their approaches to learning, in ways indicated earlier in the present chapter.

Nonetheless, if it is students' contextual perceptions which are paramount, how are lecturers to determine what these are? In part at least, like student-centred teaching (Bligh, 1982, p. 19), a sensitivity to context springs from an attitude of mind, but a student perspective cannot simply be guessed at or predicted. Positive efforts need to be made to engage in dialogue with students. We noted earlier that coming to know students as individuals is widely valued in contemporary higher education, and there are no necessary barriers to an equivalent emphasis on open discussion of course perceptions and learning experiences. Course demands and assessment expectations are often tacit for fear of 'spoonfeeding' students or leading them to devote too much of their time to assessed work. Yet paradoxically, a lack of openness and a reluctance to clarify or patiently explain may have precisely the opposite effect to that intended: mechanical or reproductive strategies, born of student uncertainty and anxiety.

A commitment to dialogue can be coupled to more formal attempts to elicit students' perceptions, perhaps by making use of the Approaches to Studying inventory described in Chapter 9. Conventional evaluation or feedback questionnaires tend to reflect a teacher-centred conception of the teaching-learning process. They are geared in the main to lecturing performance, and ask students to rate lecturers on items such as the following:

- The lecturer presents material in a well-organized way
- The lecturer makes good use of handouts
- The lecturer is clearly audible
- The lecturer attempts to link lecture material to laboratory work/practical work/fieldwork/seminars.

The Approaches to Studying inventory, by contrast, is concerned with how students go about learning and how they perceive course or departmental milieux. Students indicate their strength of agreement or disagreement with statements linked to the scales outlined on pp. 159–160. Examples of items tapping course perceptions illustrate the contrast with conventional questionnaires:

- Lectures in this department are basically a guide to reading

- Staff here make a real effort to understand difficulties students may be having with their work
- It's hard to know how well you're doing in the courses here
- There is so much written work to be done that it is difficult to get down to independent reading
- This department gives you a chance to use methods of study which suit your own way of learning

The inventory is now beginning to be used as a source of feedback at Oxford and Newcastle Polytechnics and at the University of Lancaster, and it has already been employed at Oxford Polytechnic in preparation for an institutional review by the Council for National Academic Awards.

## **Teaching as a Holistic Strategy**

Thus far we have considered teaching-learning process under three broad headings: teaching for understanding; teaching students how to learn; and creating a context for learning. But though convenient for the purposes of discussion, this fragments what should be seen interconnectedly. The three headings are representative less of distinct areas than of complementary and interrelated aspects of teaching in higher education. Indeed, to seek to view teaching in the round, conjunctively and holistically, is perhaps the most important element in an experiential conception. This might seem a very obvious point to make, but obvious or not, it is at odds with contemporary practice. Just as it has been commonplace to consider lecturers and teaching in isolation from students and learning, so are there customary but unwarranted boundaries which separate discussion of curriculum from discussion of assessment and discussion of teaching. This compartmentalization is apparent not only in the literature of education, but also in the procedures which colleges and universities follow in designing and administering courses.

Marking and assessment schemes may be devised or modified without reference to the possible consequences for what or how students learn, or without regard to any ensuing tensions between assessment as feedback and assessment as evaluation of student achievement. How many academic share the view of Elton (1982, p. 107) that "the overriding purpose of assessment is that it should encourage learning in consonance with my declared student learning aims"? Where conflicts do arise between assessment and teaching strategies, a holistic view can help to resolve them, as a recent Australian study shows (Newble and Jaeger, 1983). In the School of Medicine at Adelaide University, final-year assessment was revised so as to give greater weight to clinical competence. But the effect of the reform was in precisely the opposite direction. Once it became apparent to students that the risk of failing the new ward-based clinical assessment was low, they began to spend little time in the wards and made studying for the much more hazardous theoretical component of final assessment a priority. Only when the faculty responded to this "selective negligence" (Snyder, 1971) by introducing a more demanding and innovative form of clinical assessment did a more balanced set of priorities emerge. A consideration of the situation in the round therefore made it possible to restore equilibrium without abandoning the desire to innovate which had prompted the earlier reforms.

Another form of compartmentalization occurs when institutional norms are established for 'course contact hours' or 'appropriate' ratios of large-group lectures to small-group discussions, but in isolation from consideration of specific course content, students' workloads or the level and incidence of one-to-one guidance which may be essential if students are to achieve genuine understanding. When students then press for more individual help, tutors may be driven to plead, and with justification, that their formal teaching load and their marking commitments make this impractical. A more unified view, weighing the respective needs and perspectives of lecturers and students, could provide the basis for a more balanced strategy. A parallel problem may arise because, especially following the widespread introduction of modular schemes of study, only students themselves may fully perceive what a particular selection of course units implies for their workload. In fact, few academics are probably well-informed about the basics of students' working life. One small-scale study (Hounsell and Ramsden, 1978) has suggested that lecturers not only lack knowledge, as we might expect, of ways in which students tackle the learning tasks assigned them, but that they are uncertain even of how much time students spend on such tasks. An Australian survey of coursework assignments in a range of disciplines (Roe, 1974) revealed similar shortcomings. Students' advance estimates of the percentage of their study time an assignment would take to complete were double the figures suggested by their tutors, while the proportion of their time the students actually spent on those assignments turned out to be three times the tutors' original estimates. Such disparities suggest that tutors' expectations of what students might reasonably accomplish have little grounding in reality. Yet such expectations, based on largely unquestioned yardsticks, critically determine the decisions taken on teaching methods, study activities, syllabus content and assessment.

It is also desirable that in a holistic view, learning and teaching are seen developmentally. Courses in higher education already reflect this in some respects. Many curricula, for example, are designed to offer steadily greater opportunity for choice and specialization, building from a broad and secure foundation of subject-matter in the first or second years of the course. The curriculum of the Medical School of the University of Newcastle, New South Wales, shows how that same structured and gradualist approach can be taken to how students learn. In setting out its overall objectives,

"The Faculty wished to place emphasis not only on the *content* to be mastered by its students, but also on the *process* by which students should be assisted towards the stipulated goals". (Engel and Clarke, 1979, p. 17)

An aim which the school was particuarly keen to stress was that students should become self-reliant in their learning. One step which was therefore taken was to identify the skills required for independent learning (see Panel 11.3), while another was to abandon lectures as a

#### **PANEL 11:3**

Skills Required for Independent Learning (School of Medicine, University of Newcastle, NSW)

The student will be able and willing to:

- 1. recognize his assets and limitations;
- 2. identify what aspects of knowledge, understanding, skills and attitudes he needs to acquire;
- 3. locate the information and experiences he requires for this learning;
- examine critically the evidence on which scientific information is based;
- 5. organize his learning activities in a pattern that will be both effective and efficient for him;
- 6. monitor his progress in the acquisition of new competence;
- 7. monitor his performance as a future physician;
- 8. evaluate his educational experiences.

method of teaching. But it was also seen as crucial to plan a curricular and teaching strategy which systematically fostered the growth of independent learning:

From the first day of the first term students are encouraged to identify what they need to learn in order to solve and manage problems. The main thrust of this approach is centred, but by no means exclusively, on problem-based learning. Here the students are helped to ask themselves questions in a logical order, so that the resultant sequence of learning will lead to the answers that can be applied to the problem in hand. This approach is reflected in the way in which each first problem-solving group meeting is organized and the way in which the related learning material is planned. (Engel and Clarke, 1979, p. 24)

Initially students are helped to plan their learning and locate the necessary information through the provision of course materials which include detailed lists of objectives, resource sheets and 'learning units'. The materials are very specific during the early part of the undergraduate course to enable students to become accustomed to the new way of organizing their studies, and there is close monitoring of achievement and atrong tutorial support. As the student's studies progress, however,

Such guidance will become less and less detailed until the mere presentation of a patient-centred problem will enable students to define their own objectives, seek out the necessary information and

apply it to the solution or management of the problem. (Engel and Clarke, p. 24)

# **Teaching Reflectively**

One of the conclusions of a project on small-group teaching in universities is as follows:

It did not seem common for teachers to combine in tutorials, or to visit each other's, or to have much discussion about the rationale of the various administrative arrangements . . . Often participants in our discussions had not had other opportunities of discussing their teaching with colleagues, and only in a very few cases had teachers discussed their intentions or methods with their students. (Abercrombie and Terry, 1978, p. 148)

In our view, similar observations could be made about higher education teaching in general, and an underlying aim of this chapter has been to show the need for more considered and systematic reflection about the teaching-learning process. More specifically, we have tried to demonstrate how academics can ally their own experiences and perspectives to an understanding of those of their students, and thus learn from an experiential conception of teaching. We have indicated directions which fresh initiatives might follow, but without prescribing fixed routes forward. Since every teaching-learning situation is in its own way unique, academics must be their own helmsmen, devising courses of action tailored to their discipline, their local circumstances and their own particular purposes. Reflective teaching and the quality of learning go hand in hand.

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### Notes

1. Unit 5. Modern Britain: The Economic Base. In: *Understanding Society*. (D102). Milton Keynes: The Open University. p. 46.

# CHAPTER TWELVE

# Changing Conceptions of Learning and Research

#### NOEL ENTWISTLE AND FERENCE MARTON

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In Chapter 1 we introduced the idea that there are contrasting perspectives on learning. In particular, we identified varying perspectives held by lecturers, psychologists, and educational researchers and pointed the way towards an alternative perspective—that of the student. Each of the succeeding chapters has introduced evidence on how students themselves have experienced different aspects of learning and studying. In the process the reader has been introduced to a potentially confusing range of terms introduced in the various studies, together with descriptions of variations in qualitative methodologies.

In this final chapter we aim to provide a conceptual and methodological integration of the work presented in earlier chapters in a way which will point up the defining characteristics of this perspective on learning, and of the research methodology that has been used to explore it. In the previous chapter the research findings were used to challenge lecturers to reconceptualize the role of teaching in the teaching-learning process. We invited them to recognize how students' approaches to learning were uffected by the way academic tasks were presented to them and by the powerful effects of assessment procedures. Our ideas about study skills also demanded a radical reappraisal. We were calling for a fundamental whift in emphasis away from the more mechanical aspects of study skills. Students can be helped to take more conscious control of their study activities, to be more aware of their own purposes in studying, and to relate these to the explicit and implicit demands of the courses they were taking. And yet in providing illustrations of the ways in which teaching and curricula might change, and students helped to learn, we did not seek to be narrowly prescriptive: we did not recommend a single 'right' way to teach or to study. The results of our research introduce a way of thinking about teaching and learning which provides guidelines for lecturers and students. It does not produce detailed prescriptions because we have shown how learning and teaching need to be considered in relation to both content and context. Teachers or students have, instead, to reflect on their own individual needs and circumstances in the light of our findings — and then decide what action is implied.

This reinterpretation of the research findings to fit individual requirements carries with it an added necessity to reach a full understanding of the main concepts and categories used to describe student learning. We have therefore tried in this chapter to bring together the previous attempts to show the relationships between these concepts. It must be

stressed, however, that the particular integration attempted here is only one of several possible ways of viewing these inter-relationships. It is. indeed, an essential corollary of the concept of learning developed from this research that understanding depends on personal reinterpretation. Thus each researcher could have produced a separate integration, organized around different salient features of the research. And yet there is sufficient agreement to mean that the broad picture of student learning emerging from our research would have remained much the same.

THE EXPERIENCE OF LEARNING

### The Different Research Groups

One way of beginning the process of integration is to recognize that research is a cumulative process. Thus time sequence, and previous research interests, affect the findings obtained. The first experiment on student learning in Gothenburg, and the methodology it embodied, had a profound influence on each of the subsequent studies carried out. The research group in Gothenburg has always put great emphasis on analysing study processes in relation to the content of what is being learned. Over time that has developed into what Marton (1981) has called phenomenography, a view of learning described in terms of changes in a person's conception of aspects of reality. The research method has relied predominantly on naturalistic experiments and detailed analysis of learning outcomes derived from tasks set by the researcher. The British research groups, from the beginning, showed more interest in the students' experiences of everyday studying. There has been less emphasis on detailed content, more on the tasks set by lecturers, and on the effects of teaching and assessment on how students tackled those tasks.

From Gothenburg, in the first instance, came the influential analytical description of learning in terms of approaches to learning and outcome space, and also a distinctive methodology which showed how student learning could be investigated qualitatively, yet following a systematic and rigorous analytic procedure. Much later, from more wide-ranging interviews, conceptions of learning were examined in relation to approaches and outcome. But it was the striking initial findings, and the distinctive methodology which set in train the research carried out by Noel Entwistle, Dai Hounsell and Paul Ramsden at Lancaster University, the studies initiated by Vivien Hodgson, Diana Laurillard and Liz Taylor at Surrey University, and the work of Graham Gibbs and Alistair Morgan at the Open University. Each of these four research groups has developed its own distinctive interpretative framework in investigating different aspects of student learning.

The SSRC research programme at Lancaster built on a previous five-year study which had already contrasted lecturers' and students' descriptions of teaching and learning, but which had concentrated more on the contrasting motivations and study methods of students. The methodology adopted at Lancaster was thus, initially, strongly influenced by quantitative and statistical approaches, while at Surrey the research

had concentrated from the beginning on learning experiments, observations and interviews.

Out of the Lancaster research came the concept of study orientation — implying that 'approach' was to some extent a stable characteristic of the student—or at least that some students adopted consistent approaches across a range of different study tasks. This idea was rooted in the earlier research on motivation and study methods. But the main part of the Lancaster work involved a thorough investigation of students' experiences of learning in a natural setting — of the impact on learning of the overall context of learning, with particular emphasis on the influence of assessment procedures and on conceptions of essay writing.

Out of the Surrey research came the distinction between extrinsic and intrinsic relevance or interest, in relation to the experience first of lectures and then of the course as a whole. The concept of orientation to education drew attention to the individuality of a student's purposes in relation to the course being studied, and there was also a growing recognition at Surrey of the variability in approach shown by individual students and the effects of teachers, content and task demands.

At the Open University there was, of course, interest in reinterpreting the Gothenburg findings in relation to distance learning and part-time mature students, but also the concepts provided a theoretical rationale for the work already being done there in 'learning to learn' workshops (Gibbs, 1981). The shared experiences of studying discussed in the workshops provided further evidence of the influence of purpose on approaches to studying, and stimulated interest in ways of integrating the various categories used to describe student learning. As a result, a longitudinal study was carried out with a group of OU students which provided evidence of the inter-relationships between orientation, conception, approach and outcome in terms of a holistic view of the learner — and of *changing conceptions*, a developmental perspective.

Thus the ideas from Gothenburg were nourished in different research climates in Lancaster, Surrey and the Open University, producing different fruits. But the 'cross-pollination' among these four research groups from 1975 onwards had an important formative influence on the emerging description of student learning. That description involved a shared understanding. And yet each group, and to some extent each individual within each group, retained a distinctive interpretation of the salience of the different aspects of student learning identified. These differences come through very clearly in the earlier chapters, and yet throughout the book there is a shared understanding of how to describe student learning. The fact that there is such substantial agreement may not be made explicit enough in some of the chapters, and so needs to be stressed here.

# The Original Learning Experiment

As we have said, the four research groups contributing to this book were all influenced by the original experiment conducted in Gothenburg. That

experiment broke the dominant tradition in research on learning in several important ways. First it provided a rigorous qualitative methodology which allowed students' experiences of learning to be studied more systematically. Then it challenged the predominant conception of learning as the accretion of elements of knowledge — as the degree of verbatim correspondence between the student's answer and the information presented. The research also emphasized the crucial importance of both 'intention' and organizing principles in affecting the outcomes of learning, and finally showed the importance of analysing those outcomes in terms of the specific content of the learning task. The research method demanded that student learning should be described in terms of realistic content and everyday tasks as experienced by students: it should be 'grounded' in perceived reality, not interpreted from the preconceived theoretical frameworks of the researchers.

The importance of the new methodology will be considered later. Here we concentrate on the major constructs introduced to describe student learning, beginning with the ideas of outcome and approach. The first experiment in Gothenburg showed that students had reached qualitatively different levels of understanding. The fundamental distinction in the outcomes of learning initially contrasted attempts to reproduce verbatim parts of the text, with the variety of reinterpretations emerging from a deeper engagement with its underlying meaning. That variety of reinterpretations, described by Lars-Owe Dahlgren in Chapter 2, drew attention to the idiosyncratic nature of human understanding, and laid the foundation for the different conceptualization of learning which has become the hallmark of subsequent work by the Gothenburg group. Dahlgren described studies in which the outcomes of learning could be described as qualitatively different levels of response to the article that had been read. In other work the differences represented variations in the way important concepts had been understood, and the effects of teaching on conceptualization were demonstrated. It now seems clear that we can expect to see in student learning an outcome space which may contain both distinguishable levels of understanding and distinctive variations in emphasis, or modes of expression, within each level. Understanding depends on the linkages made by the individual between new information and previous knowledge and experience.

The different levels of outcome, where they exist, can in many cases be described in terms of the SOLO taxonomy, or more simply as attempts either to explain, or describe, or just mention, aspects of what has been learned. Underpinning these different levels of understanding can now be seen the contrasting organizational principles described by Svensson in Chapter 4. The basic distinction is between hierarchical and sequential or associative ways of relating elements of knowledge. The hierarchical principle involves developing an interpretative framework, which can be formally logical or theoretical—or in contrast it may rely more on personal experience and so build up an idiosyncratic analysis. But this organizing principle is essentially integrative and holistic. Where the knowledge is organized sequentially or by associative principles on the

other hand, the elements of knowledge are only loosely and disparately bound to each other — and so are less likely to be remembered, unless the information is regularly repeated.

The next, and probably most influential, concept identified in the original Gothenburg experiment described an 'obvious' aspect of learning virtually ignored by earlier research. Many students failed to 'get the point' of what they were reading "simply because they were not looking for it" (see Chapter 3). Ference Marton chose the terms 'surface' and 'deep' initially to distinguish two levels of processing which involved contrasting focuses of attention — the surface level of the text itself and the deeper level of meaning which the author was trying to communicate. But subsequently the term approach to learning was preferred as a more accurate description of the meaning of the concept. Thus Marton used the term 'approach' to include both intention (what the learner was looking out for) and process (how that intention was carried out). More generally, this term also carries with it the experiential quality of the interpretation of student learning which is being made, avoiding the mechanistic overtones of 'processing'.

Marton's original experiment had also shown empirically how closely the approach to learning related to outcome. It became clear subsequently that this relationship was not just empirical, it was functional, and in part logically inevitable. The decision to concentrate on the text itself carries with it an implicit decision to ignore the meaning. Thus a surface approach rules out the possibility of a deep outcome. The reverse relationship is, however, not logically inevitable. A deep approach is a necessary, but not sufficient, prerequisite for full understanding. Clearly previous knowledge and cognitive skills will affect the extent to which a deep intention can be converted into a deep outcome. There is thus an implicit temporal sequence in which outcome can in a sense be 'explained' by intention and process, which seem to precede what is learned during that process.

This first experiment invited students to reflect not only on their experiences of reading the article, but also on how they tackled everyday studying. The data available for analysis thus included students' recollections of what they had learned, and of their ways of tackling both the experimental article and their normal academic work. When Marton analysed these data, he treated outcome and process separately, before subsequently showing their close inter-relationship. Lennart Svensson used all three sets of descriptions in his independent analysis of the data. Although he also identified two distinct approaches which involved almost identical defining characteristics (see Chapters 3 and 4), he chose the terms 'holistic' and 'atomistic' to describe the main difference. These terms were chosen to draw attention to what Svensson saw as the most salient feature of the distinction — whether the students were focusing on the text as a whole or on its constituent parts. And this same focus of attention could be found equally strongly both in the students' organization of their 'outcome' answers and in their descriptions of how they read the article and studied. Svensson did not seek to explain

outcome in terms of approach; instead he preferred to describe intention, process and outcome as different facets of the main organizational principles, which he characterizes in Chapter 4 as skill in learning or studying. We have already seen that the differing levels of understanding in outcome space can be described in terms of contrasting organizational principles. It is just these principles which Svensson sees as the main defining features of the approach to learning as well. The holistic approach represents attempts at integration, while the atomistic approach relies, at best, on associative linkages. Knowledge is organized by the individual in ways which reflect the organizational principles used in developing personal understanding. These organizational principles also direct the lower-level study skills, and thus have greater power in influencing subsequent learning than the more mundane procedural aspects of studying such as reading speed or note-taking. Students develop expertise in learning through building up a wider array of knowledge within their developing organizational and interpretative frameworks. In this way a learning outcome can be seen as reflecting a neurological embodiment of the interaction of previous knowledge with each new learning task, and in this sense intention, process and outcome are not just functionally related, they are components of an integrated whole.

We thus have approach to learning categorized in two different ways which emphasize equally important contrasts in the data. Students differ in the way in which they relate to the text (whether or not they try to extract personal meaning), and they also differ in the way they try to organize what they are learning. The categories (deep/surface and holistic/atomistic) prove to be empirically very closely related, but the conceptual distinction remains useful in thinking about student learning.

# Approaches to Everyday Studying

Most of the initial work in Gothenburg used naturalistic experiments on reading academic articles, first to develop concepts and categories, and then to explore the effects of question types, intrinsic motivation, and anxiety combined with extrinsic motivation on the approaches to learning adopted by students. In these experiments there was no time pressure: the students could read the articles at their own speed. There was also no pressure due to course requirements or formal assessment, although the anticipation of questions afterwards created a feeling of pressure in some students. Roger Säljö's research on reading (Chapter 5), by asking more general questions about learning, showed the different ways in which students with varying levels of educational experience interpreted the task of reading part of an academic text. The surface approach to reading adopted by some of the less experienced students was presumably strongly affected by their previous experiences of education — and in particular by the tendency at school to equate learning with the acquisition of factual knowledge.

In Britain a majority of studies has concentrated on research in the natural setting, in which students are asked about their experiences of everyday studying — of attending lecturers, of writing essays, of solving problems, and of the varying effects of teaching, time-pressure and assessment on those activities. These studies have led both to a broadening in the meaning of approaches to studying, and to additional conceptualizations. The description from the Surrey group of 'extrinsic' and 'intrinsic' relevance or interest contrasts a concern with completing formal requirements with an interest in the content of what is being learned. A similar distinction emerged in the Lancaster research programme as the most consistent indicator of surface and deep approaches to everyday studying. In the Gothenburg research 'awareness of the experimental conditions' was one of the indicators of a surface approach, but it was of subsidiary importance to concentrating on the text itself, as opposed to its meaning. In everyday studying, awareness of assessment requirements within the learning context assumes a dominant position in defining a surface approach. Although the deep approach continues to be defined in terms of seeking meaning, relationships with teachers appear to mediate this way of learning.

In Chapter 6 Vivien Hodgson described students' experiences of lectures. Her categories of intrinsic and extrinsic relevance seem to represent deep and surface ways of experiencing lectures—thinking about the meaning of the content compared with how the lectures will help with course requirements. But vicarious relevance adds an additional dimension which stresses the importance of the relationship with the lecturer. Good teaching helps students to perceive relevance through the lecturer's own conviction of relevance, enthusiasm, or use of striking illustrative examples. Vicarious relevance can thus be seen as a bridge towards a deeper grasp of the subject matter provided by good teaching. It is also an intermediate category between surface and deep.

Dai Hounsell investigated students' experiences of essay writing (Chapter 7). In characterizing essay writing he drew attention to three main clements — data, organization and interpretation, which are defined and inter-related in different ways within contrasting conceptions of essaywriting. But he also emphasized the importance of the student's intention in understanding the type of essay ultimately produced. Again two of the main categories parallel those of approaches, partly intentional and relational, but more clearly in terms of organizational principles. The essay as an "ordered presentation of an argument well-supported by evidence" implies a logical integrative framework of interpretation. The viewpoint essay represents a more personal interpretative framework, one Into which the data are, in extreme instances, almost incidentally fitted. The essay as arrangement seems to rely more on the associative organizational principle within which facts and ideas follow sequentially without any clear interpretative stance. Here the surface concern with the essay as an element of assessment can also be seen in some of the comments. Of course Dai Hounsell was also describing the outcomes of learning — the essays themselves. It should not be surprising, then, if we

see in his categories echoes of the organizational principles underlying the distinctive levels of understanding described by Dahlgren in Chapter 2.

Diana Laurillard was interested in problem-solving (Chapter 8), not just as an experimental task, but also as part of students' coursework. Their perception of the task proves to be fundamentally affected by the context. "The problem is not an isolated event; it comes after a certain lecture, and is likely to relate to it. It will also be marked by a particular lecturer, and the solution should take this into account." Laurillard again found evidence of the pervasive validity of the distinction between deep and surface approaches—seeking the meaning of the problem as distinct from a more mechanical or procedural way of completing the task requirements.

In each of these investigations of everyday studying it became clear that as the research focus widens, so the original formulations of approaches to learning also have to be both expanded and modified. In everyday studying the context of learning is a complex and every present influence on the student's perceptions and activities. It also became clear that, even where the categories 'deep' and 'surface' could still be used, the specific indicators of those approaches varied in contrasting academic environments. In Chapter 9 Paul Ramsden described in considerable detail the effects of contrasting contexts of learning in different academic departments. The implications of his findings on the effects of good teaching, workload and freedom in learning have been discussed in the previous chapter. Here we are concerned with how the indicators of the differing approaches to learning varied within the contrasting learning contexts. His initial interviews were carried out in Psychology and Engineering Departments. The psychology students described their ways of studying in terms which could be readily classified in terms of 'deep' and 'surface' approaches. But the experience of engineering students was very different. At first there seemed to be not evidence of deep approaches at all. However, further analysis indicated that in a tightly controlled learning environment, and in an applied science, the deep approach took a rather different form. Ramsden found that it was essential, in engineering, to pay much more attention to factual and procedural detail, particularly in the early stages of mastering a topic. He also found that a deep approach, in the sciences in general required a firm basis of prerequisite knowledge, whereas, in the arts interest was more often cited as important. We thus have a global concept — approach to learning — which is recognizable across a wide range of content areas and learning contexts. The main defining features — emphasis on understanding or reproducing — are consistent. but the particular indicators of these categories vary in their relative importance from context to context. The basic meaning remains constant but its expression is variable.

# Approaches to Studying and Styles of Learning

The study strategies reported by science and social science students draws attention to the fact that understanding may be sought in different ways.

In Chapter 8 Diana Laurillard introduced the work of Gordon Pask. He had found that when students were required to reach understanding there were still two distinguishable strategies adopted. "For one, students built up a complete framework by beginning with general descriptions and later filling in details; for the other, they built up the framework step by step from details to the more general principles". From these strategies, and Conversation Theory, come the descriptions of two distinctive styles of learning. Comprehension learning involves description building, seeking relationships between ideas and constructing a cognitive map of an area of knowledge. It makes use of analogies, imagery and personal experience. Operation learning, in contrast, is concerned with procedures, details, and the logical relationships between them. These styles can also be used at both local and global levels. Pask emphasizes that both styles of learning at the global level will be required to reach full understanding. In many of Pask's experiments it was found that while students could use both styles of learning, they preferred to begin with one or other of them. Under controlled experiments, where understanding had to be reached, students would initially adopt comprehension or operation learning and switch to the other way of learning only when they realized that they could not complete the task without it. In his free learning tasks, analogous to everyday studying, some students would persist with their initial strategy without using the opposite style. Pask describes as 'globetrotting' the incomplete learning, or pathology, which results from the exclusive use of comprehension learning, without paying sufficient attention to detail. 'Improvidence' is an excessive emphasis on operation learning which narrows the focus of attention, and results in a failure to recognize important inter-connections between ideas.

Diana Laurillard also tried to relate Pask's ideas to those of Marton and Svensson. Her interpretation involves distinctions between global and local levels, as well as between comprehension and operation learning. A deep/holistic approach involves an integration of both styles at the global level, while surface/atomistic approaches tend to be restricted to limited operations and descriptions at the local level. It is also possible to consider the effects of time and sequence in comparing Pask's concepts with those of Marton and Svensson. With some tasks, particularly in science, memorization or at least concentration on details and logical relationships may be an essential first step towards understanding. In some subject areas, the initial stages of building up a knowledge base of, say, scientific terms or case law, will require some low-level operation learning. The student cannot undertake comprehension learning, cannot see an overview or inter-relationships between ideas until the knowledge base has reached a certain 'critical mass' - seen not simply as the quantitative accretion of facts, but as the building up of a language of precisely defined technical terms and of evidence related to those terms. In Chapter 8 we saw how the style chosen reflected, on the whole, the nature of the task. But elsewhere there is also evidence of individual preferences, at least where the task demands are not overriding. If the work load is excessive, then time will prevent a thorough learning strategy and the pathologies of learning will show clearly. Some students will

approach to learning can show both consistency and variability, depending on the questions asked and the conditions of learning investigated (see Entwistle, 1979). If the research concentrates on comparisons between distinct tasks, evidence of variability will be seen most strongly. If more general questions are asked, or a more general context is considered, then evidence of consistency will be accepted as more salient. In several of the studies reported here there is evidence of both consistency and variability, and so it seems essential to include this additional complexity in our understanding of student learning. It is, of course, quite understandable that students may develop habitual ways of approaching everyday studying, and yet that certain tasks, courses or lecturers, will cause students to vary their approach or style. For example, the perception of a task as particularly relevant or important may well create a temporary change in an otherwise relatively stable surface approach.

## **Orientations and Conceptions**

The emphasis on consistency and generality in some of the studies has also led to additional concepts. In the research programme at Lancaster, the term study orientation was used to characterize differences in the ways in which students customarily approached the tasks of everyday studying (Entwistle et al., 1979b). Chapter 9 introduced the two main study orientations which describe the relatively consistent adoption of deep or surface approaches to learning. These orientations are also associated with characteristic forms of motivation. Meaning orientation is closely linked to intrinsic motivation, while extrinsic motivation or fear of failure is generally associated with the reproducing orientation. This relationship between motivation and approach had already been found in Gothenburg by Anders Fransson and was reported independently by John Biggs in Australia (Biggs, 1978).

In Chapter 10, the term educational orientation was used to cover an even broader view of the student's educational goals which encompasses aims, values and motives. The four orientations identified - academic, vocational, personal and social—parallel the generally accepted functions of education. But the importance of this concept in research on student learning lies in the explicit recognition that students have individual purposes in embarking on their courses. In the interviews at Surrey, Liz Taylor came to the conclusion that students develop what she called a 'study contract' (Taylor, 1983). They decide what they want to get from their university experience and their courses, and direct their studying towards these personal goals. For some students, problems arise when their own 'contract' is in conflict with the demands of the course. It is all too easy for lecturers to ignore the existence of valid individual purposes among the students and believe that they should all be channelling their energies towards the goals which are valued most highly by the academic staff.

Roger Säljö introduced another more general way of viewing studying.

present work rich in ideas but light in evidence. In contrast others will submit work replete with detail but with little indication of a personal reformulation of ideas presented. In the original Gothenburg experiment, where the students were not under time pressure, there was less evidence of incomplete learning. Thus the intention to understand could start with different initial strategies and yet show what Svensson describes as one of the main characteristics of the deep holistic approach—the ability to recognize the link between evidence and conclusions in following the author's argument. In Lancaster, where a variant of the original experiment was carried out which put the students under time pressure (Entwistle et al., 1979a; Entwistle and Ramsden, 1983), two types of deep approach were identified, one which emphasized the search for personal meaning without relating facts to conclusion, and another which took account of the evidence and concentrated on the essential points in the article without looking for personal meaning. Both these approaches were quite distinct from the surface approach in which a low level of understanding was associated with memorization of discrete elements in the text. In more recent work on conceptions of essay-writing, Dai Hounsell has identified a third 'fully deep' approach in his category of 'argument' in which students develop meaning through a close attention to detail. His viewpoint category, on the other hand, represents an over-emphasis on personal meaning, which parallels one of the previous two types of partially deep approach, and can also be found in Lennart Syensson's description of a holistic approach which is not fully deep in outcome.

Both Pask and Svensson imply that full understanding demands personal reconstruction of information, and a recognition of the fact/conclusion relationship. Pask calls this combination a versatile learning style, Svensson describes it as a holistic approach, while the defining features could also lead to it being described as a deep approach. The similarity in these descriptions is striking in spite of the terminological and conceptual differences. For lecturers and students such differences in conceptualization are less important than a recognition of the basic phenomena which unite them.

# Variability and Consistency in Approaches to Learning

In Diana Laurillard's investigations of problem solving it was clear that students moved from comprehension to operation learning even within a task, and certainly between tasks. Their strategy was adapted to the perceived task requirements. Both she and Paul Ramsden also found students shifting between deep and surface approaches from task to task. Reasons for such variations were found in the nature and perceived purpose of the task, in relationships with the tutor, and in the degree of interest or importance the task held for the student. But both in Gothenburg and in Lancaster there was also evidence of stability in the approach to studying. Indeed the evidence shows clearly that the

He showed that adults held very different conceptions of learning (Chapter 3). The main distinction was between learning seen as 'increase in knowledge or memorization' compared with 'abstraction of meaning or understanding reality'. In Chapter 5 Roger Säljö's interviews showed that the ways in which adults go about reading an article seem to mirror the fairly stable conception of learning which they hold. After reading the article used in his study, which itself described the distinction between 'deep' and 'surface' approaches to reading, some people remained wedded to a surface approach because their conception of learning did not include the possibility of extracting meaning from a scholastic task. Those with more sophisticated conceptions accepted learning as 'thematized' or reflective — taking different forms according to different circumstances or task requirements. In Chapter 1 we introduced William Perry's ideas of relativistic reasoning contrasted with dualistic thinking. The main essence of Säljö's concept captures a similar distinction between an absolutistic concern with facts and a pluralistic view of knowledge as alternative pathways towards meaning.

# A Network of Concepts

In Chapter 5 Roger Säljö showed the ways in which unsophisticated conceptions of learning were associated with atomistic or surface approaches to reading, and with ways of understanding which failed to represent the author's intention. The students remembered aspects of the text which were correct, but not salient in terms of the argument being developed. Dai Hounsell introduced the categories of 'conceptions of essav-writing', again showing the inevitable connections between the way in which the student conceived of essay-writing (or even of the discipline itself) and the procedures used in collecting, systematizing and analysing the data relevant to the essay topic.

In Chapter 10, the longitudinal study in the Open University provided evidence of the empirical inter-relationships which exist between orientation to education, conception of learning, approach to studying. and the level of understanding reached. Although the chapter illustrated the findings through two case studies, the conclusions were based on a thorough analysis of repeated interviews with 29 students, and they provide the first firm indication of developmental changes in conception of learning parallelling those Perry found in the transition from dualistic to relativistic reasoning.

The identification of the more general concepts of orientation to education and conceptions of learning or essay-writing, together with the evidence of developmental change, allow us to extend the temporal sequence mentioned earlier. It is now possible to trace a chain of functional relationships from orientation or conception, to approach (including perception of the task, intention and process) and on to outcome, with something close to logical inevitability. If learning is seen as 'memorization', if the possibility of understanding in relation to educational activities has been excluded from that conceptualization, then

the student inevitably perceives the task as an external imposition, and adopts a surface approach, which in turn excludes the possibility of reaching a deep level of understanding. But such a description both oversimplifies and begins to suggest something akin to mechanistic causality. This temporal chain could lead us to ignore the fact that each link depends on a personal interpretation of context and content. The reactions of each student will, to some extent, be different, and yet the general relationships derived by Paul Ramsden invite the conclusion that there are general effects. This is yet another facet of the complexity pointed out earlier in relation to variability and consistency.

Departments influence the approaches to studying adopted by their students — but the reactions of individual students depend on their own purposes in studying, on their previous knowledge and study skill, on their perceptions of course requirements and assessment demands, and so on. The influence we are talking about is by no means inevitable; we are not describing a mechanical system, but we are inviting lecturers and students to consider a network of inter-relationships and a variety of probable consequences. The identification of this network of concepts. although representing an important advance in research on teaching and learning in higher education, should not be seen as, in any sense, a completed research programme. It provides a set of accurate descriptions about the way students tackle certain everyday academic tasks, and indicates some of the ways in which course design, assessment demands, and teaching methods may influence the quality of student learning. But the realization of the effects of context on learning strategies poses an enormous challenge to researchers and lecturers alike. Although the findings are not intended to be prescriptive, they have to be specific enough to provide lecturers and students with sufficient parallels with their own circumstances to enable them to reinterpret the conclusions effectively. At the moment there is still a substantial gap between the range of situations investigated by the researchers and those faced by lecturers and students. In general terms, for example, there have been no studies of the experience of tutorials, seminars, workshops, simulation exercises or laboratory work. In specific terms, we need detailed analyses of individual departments to extend the work currently being carried out at the Open University and the action research which provided some of the examples in Chapter 11. A promising start has been made, but much more work is still required.

# Research as Learning

A search for a better understanding of student learning has been the shared enterprise undertaken by all the contributors to this book. We have each been involved in changing our conceptions of some aspects of the world of higher education, and the teaching-learning process more generally. In terms of our own definition, then, we too have been engaged in a learning task. We should therefore expect to find in the research process parallels with our descriptions of student learning - and

so a redefinition of that process. And that is just what we do have—a changed conception of research in terms of intentions, processes and outcomes.

THE EXPERIENCE OF LEARNING

The outcomes of research are its findings. Traditionally, research addresses itself to 'how' and 'why' questions. For example: Are girls better at learning prose passages than boys? Do children learn more from a text they have listened to than one they have read? Why does 15 per cent of an age-group fail to learn arithmetic? Why are some teachers more effective than others?

The outcome of such research is, of course, a series of attempts to answer the questions, and moreover to answer them in ways which have direct practical implications for teachers or pupils. The model of research being adopted within this traditional approach is one which uses explanations, and cause and effect relationships, to make predictions about human behaviour. The results contribute to technical knowledge, and also, through prediction, allow other people's behaviour to be controlled. Prediction and control become two sides of a coin moulded from a deterministic view of human behaviour.

Our research, in contrast, reflects the purposive and individualistic aspects of human experience. It avoids the 'how' and 'why' questions, and concerns itself, instead, with 'what' questions. What does it take — to be good at learning from a text; to learn arithmetic; or to be an effective teacher? The researcher seeks an understanding of the phenomenon, tries actively, as in a deep approach to learning, to extract the underlying meaning of human actions. And meaning has to come from the individuals involved — their own perceptions of what they are doing and why they are doing it. Once we involve the participants in this way, there has been another important shift away from the dominant research tradition. The traditional approach has attempted to explain the 'real' world' of external events. When we talk about "the learner's conception" of some aspect of reality" or "the perception of situational demands", it is clear that we have shifted from the usual research perspective of looking at the learner's behaviour observed by the researcher, to one in which we are describing the world as seen and interpreted by the learner. This distinction has been discussed by Marton (1981) in terms of a difference between a first-order and second-order perspective. The former is observational, 'from the outside' or noumenal, the latter is experiential, 'from the inside', or phenomenal.

In Chapter 3 the change in terminology from 'levels of processing' to 'approach to learning' not only emphasized the role of intention in learning, but also made explicit a change from being concerned with externally viewed processes to an interest in the learner's perspective on the content, context and outcome of learning. Our results, then, were not statements about the contents of the learner's long-term memory, or about the limitations of short-term memory, but rather descriptions of how the text is interpreted by the learner—either as a self-contained domain of words and fragments of ideas to memorize unthinkingly, or as a metaphorical window through which aspects of reality become visible,

and more intelligible. In the former, what is learned has no meaning beyond itself: it forms a self-contained world of its own, cut off from everyday reality. In the latter, what is learned connects to the world in which we live and work: it enhances our grasp of everyday reality. The outcome of our research is not technical knowledge of the kind which lays down set procedures or prescribes fixed courses of action; it is hermeneutic or interpretative knowledge, but it is also related to a particular range of situations and is thus contextual in nature. The results are intended to improve people's understanding of those particular aspects of the world which we have been investigating, or ones with very similar characteristics. The effects of our research findings could have an 'emancipatory' potential if the insights presented by the research help others to improve their own circumstances and realize their potentialities more fully. In the previous chapter, the emancipatory possibilities of our research findings were suggested in terms of illustrative case studies, while the conceptual analysis in earlier sections was intended to help readers to carry out their own interpretation of our ideas more effectively.

Looking at the process of research—the research methodology — continues our consideration of research as learning. How do we go about seeking a better understanding of student learning? As we have said, we start by asking the participants to describe their experiences. In Gothenburg the research process has involved a particular emphasis on content — on the 'what' of learning — but with a recognition also of the importance of process and context. The data thus contains detailed descriptions of students' recollections of what they had come to learn. In the British studies the over-riding concern has been with context in everyday studying — how differences in teaching or assessment affect the processes of studying. This inclusion in the investigation of learning of detailed analyses of both content and context represents a further shift away from accepted research methodology. Again, in describing what influences learning, psychologists traditionally have assembled a formidable array of concepts to explain differences in learning outcome. These concepts are introduced in the early stages of the research to produce hypothesized explanations. The next stage is then to 'operationalize' that concept — to devise a way of measuring it. In the majority of the studies reported in this book, the main finding has been a set of categories. Thus what is in conventional research the starting-point becomes in our own work the end-product, as the nature of what is being described is in itself considered to be problematic. Thus the identification, construction, delimitation and refinement of descriptions is at the heart of our research methodology. The process by which interview transcripts are read and re-read, categorized and recategorized has already been described in detail in Chapter 3. It can be seen as a parallel with the students' attempts to derive meaning from a text by organizing knowledge into their own interpretative frameworks through their exploration of patterns of similarities and differences within the information presented (see Chapters 4 and 7). And the findings of other chapters result from a

similarly rigorous process of analysis and interpretation. Even the use of extracts from the interviews is rather different from most interview studies. The quotations are not just presented as interesting comments introduced almost incidentally, they exemplify the defining features of the categories identified.

Having established these categories, what evidence do we have for their validity and reliability? Do the categories describe important features of psychological or educational reality, and to what extent would other researchers put interview extracts into the same categories? The canons of conventional research 'law' can hardly be expected to be applied in an unchanged form to research in such a different tradition. In Chapter 1 we quoted Miller and Parlett (1974), who argued that the most powerful check on a study's validity was whether it described a 'recognizable reality'. It is on such grounds, and on the rediscovery of the main constructs by independent researchers in differing contexts, that our claims for the validity of our findings must rest. The reliability of categorization is more readily checked by the conventional means of inter-judge agreement. In all the studies the level of agreement has exceeded 75 per cent, with a more typical value being above 80 per cent (see, for example, Chapters 3 and 7).

Rather than carrying the argument for validity and reliability further, it would be fairer to point up some of the problems created by this approach to research. It has been suggested that one of the hallmarks of this developing research tradition is its rejection of the conceptual arrays offered by psychologists and sociologists. It has been stressed that the researcher tackles each study with an open mind and tries to describe either distinctive categories of outcome or salient aspects of the processes of teaching and learning as perceived by the student. In the early stages of the research this claim was true, but as the powerfulness of the main concepts became recognized their effect on each new study has to be accepted. The ways in which outcome space are described, and the recognition of deep and surface approaches or of integrative organizing principles, must be strongly influenced by the accumulating literature of previous studies. Thus there may be a danger that this new approach to research could develop its own orthodoxy of thinking, and so restrict future interpretative research into student learning. But in principle, at least, this methodology should make us more aware of the danger.

Another major problem in the methodology is the emphasis on the analysis of specific content. While this approach is essential to grasp how students develop their conceptualizations of subject matter, the multiplicity of concepts faced by teachers and student alike necessitates some general guidelines. The SOLO taxonomy offers one such framework, but it may be necessary to develop similar sets of descriptions which are specific to academic disciplines and subject or topic areas. To force every outcome of learning into one classification system would be counterproductive, given the known differences between areas of knowledge. Yet to map out the range of students' responses to each major concept in every discipline would be an unending task. Nevertheless the involvement

of teachers and researchers in together exploring the phenomenography of learning has important side effects. It enables an interest in student learning to emerge out of a teacher's existing enthusiasm for the discipline. The extension of this research can thus be seen as utilizing the detailed exploration of specific concepts both to develop differing ways of classifying outcome space in a range of disciplines, and also helping teachers to understand the range of understandings and misunderstandings developed by students in the process of learning.

### **Changing Conceptions of Learning**

The conception of research described in the previous section parallels the conception of learning which has emerged from our research activities. Our intention in writing this book has been to present, in stark contrast, the taken-for-granted conception of learning as accurate reproduction of a body of knowledge largely defined by the teacher, and a view of learning as a change in the learner's understanding, brought about by a reconstruction of ideas related to the phenomenon being considered. We do not seek to argue that all learning can have the immediate aim of changing a person's conceptions. There are times, particularly in the sciences, where the initial strategies will necessarily involve the rote learning of terminology, or extended periods of procedural operation learning. Knowledge of facts is an essential part of most disciplines, but it is crucial to recognize that firm knowledge of detail depends on an active engagement in the learning process, which ultimately embeds those facts within a matrix of meaning. Thus the long-term aim of education, in our view, should still be directed to the more fundamental conceptual changes which have been repeatedly emphasized in this book.

How can a person's conception of learning be recognized? A starting point is to look at the questions being asked. Whether we refer to researcher, teacher or student, each conception of learning will evoke different types of question. The traditional view of knowledge leads the researcher to ask, for example, about the degree of verbatim correspondence between the text read and the students' answers. The teacher. whether in class or in an examination, will tend to ask essentially closed questions, expecting students to reproduce the facts or ideas previously presented. The student will be anxiously concerned about how to remember the information which, correctly reproduced, will complete the next step in the perceived course requirements. The alternative conception implies the asking of open questions, and the recognition that the answers will have interesting and revealing qualitative, even idiosyncratic, differences. The students are then encouraged to see learning as a reorganization and transformation of their understanding of aspects of the real world.

For there to be such a change in our conception there is one essential insight required. We must move, in William Perry's terms, from thinking in terms of absolutes (such as right and wrong answers) to contextual relativistic reasoning. This insight involves the recognition and acceptance

of multiple meanings: the realization that our perceptions of the world may be interpreted in a whole range of different ways. To judge the outcome of learning, it is thus necessary to examine the quality of the interpretation presented by the learner, rather than a simple count of the number of 'correct' answers.

We began the book by contrasting various perspectives on learning, and in particular by pointing out the explanations given by lecturers for the poor performance of some students. Apparently such reprehensible outcomes could be explained entirely in terms of student culpability—either intellectual weakness or laziness. Remember, however, that one lecturer sensed a paradox: the trouble was unwillingness to get down to work and yet "at some time in the past, in order for a person to have got here, presumably he had been willing, and something is going on which diminishes this willingness." If that lecturer had been more aware of the students' experiences of learning at university, their behaviour might have been less puzzling.

In a sense the main purpose of this book can be seen as helping to resolve the paradox created by the parallel existence of very different interpretations of the teaching-learning situation. Researchers, teachers and students have all been shown aspects of the multiple realities within education and invited to reconsider their own conceptualizations of the experience of learning.

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